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UNIVERSITY OF TORONTO

President's Report

1932/33 — 1936/37

FOR THE YEAR ENDING
30TH JUNE, 1933

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PRESIDENT'S REPORT

1932-1933

To the Governors of the University of Toronto:

GENTLEMEN:

In submitting my first presidential report on the academic work of the University and University College for the twelve months ending 30th June, 1933, I wish to pay a hearty personal tribute to the work of my esteemed predecessor, Sir Robert Falconer. I have had constant opportunity of observing in action those fine ideals of academic life which he cherished and realised during his long administration. High standards of scholarship, great care in the making of appointments, and the harmonious working of the various parts of this complicated educational organism, are a permanent legacy of his tenure of office. It is a great help to me to know that his ripe experience is always available to me whenever I wish to consult him.

The total staff of the University and University College numbered 852, of whom 107 were professors, 74 associate professors, 64 assistant professors, 217 lecturers, associates (in medicine and dentistry) and instructors in the College of Education, 2 directors, 1 director of field work, 390 demonstrators, fellows and instructors with sessional appointments.

The total number of students in attendance was 8274, of whom 5349 were men and 2925 women, 7957 being registered in the colleges and faculties, and 317 in the departments. The number of students proceeding to degrees was 6611, and to diplomas 815.

It is with regret that I record the death of several members of the staff: J. C. Fields, B.A., Ph.D. (Johns Hopkins), research professor of mathematics; W. N. Millar, B.S. (Penn.), M.F. (Yale), associate professor of forestry; J. F. VanEvery, B.A., B.Paed., instructor, University Schools; A. J. Bell, M.A., Ph.D. (Bres.), emeritus professor of Latin in Victoria College.

Dr. Fields was a mathematician of international fame. After his course in this University he pursued his studies in advanced mathematics in Johns Hopkins University, Baltimore, and in the Universities of Paris, Göttingen and Berlin. His publication in 1906 of "The Theory of Algebraic Functions of a complex variable" established his reputation as an original research worker in mathematics. He was president of the International Mathematical Congress which met at Toronto in 1924 and edited its proceedings. The volumes of proceedings were printed at the University of Toronto Press, and reflected honour on the editor and on the printers. He was elected a Fellow of the Royal Society of London. For six years as President of the Royal Canadian Institute, he brought to this city a series of outstanding scientists, whose lectures both enlightened the public and stimulated the cause of research. Professor Fields was a great pioneer in urging research in the University and in industry. No man in Canada made more successful and disinterested efforts than he to promote scientific education and research in our educational institutions. That research is now an integral part of our university life is in no small degree due to the example and precept of men like Dr. Fields. His name added lustre to this University.

Professor Millar was on the staff in the Faculty of Forestry from 1914 to 1933. In 1917 he served overseas in the American Expeditionary Force during the Great War. He sent in his resignation to take effect at the end of June of this year, and had obtained a position in connection with the American Forestry Conservation Corps. He died suddenly on 29th June.

Mr. VanEvery was on the staff of the University Schools for the past twelve years. He was an outstanding and inspiring teacher. During the last year of his life ill-health seriously limited his teaching activities.

Professor Bell was one of the most erudite scholars in the ranks of the classical professoriate. An old graduate of the University of Toronto, he took his postgraduate work in the University of Breslau in Germany. On his return he was appointed to the staff of Victoria College where he exercised a profound influence on his students. For a time also he was professor of classical philology on the University staff. Professor Bell's book on the dual number in Latin poetry won for him deserved fame in the world of scholarship. He was an accurate scholar and a great teacher. In addition he collected a large library which included a remarkable collection of books on the life and works of Erasmus. Victoria College has purchased Professor Bell's library. In this way his valuable Erasmiana will become available to students of history in the whole University.

The following retired:

F. N. G. Starr, M.B., M.D., C.M., F.R.C.S., professor of surgery; K. C. McIlwraith, M.B., associate professor of obstetrics; H. A. Beatty, M.B., F.R.C.S., assistant professor of surgery; A. T. Laing, B.A.Sc., associate professor, highway engineering; T. M. Porter, LL.D., instructor, University Schools.

Dr. Starr has rendered long and distinguished service to the University. A brilliant surgeon, he has inspired successive generations of surgical students with enthusiasm for their profession. From his technique they have learned the latest methods of surgical treatment. He and his wife have exercised the grace of hospitality to innumerable students during their undergraduate days.

Dr. McIlwraith was an outstanding obstetrician and an admirable teacher.

Dr. H. A. Beatty was the head of the surgical service in the Western Hospital. Under him the co-operation between the University and this Hospital in clinical teaching was made more effective. His personal kindliness endeared him to colleagues and students alike.

Professor Laing had a ripe experience in the secretarial office of the Faculty of Applied Science, and in addition has played a great part in the training of highway engineers for this province.

Dr. Porter leaves a name that is beloved and revered by thousands of young men throughout the Dominion and beyond. He was one of the most remarkable teachers of his generation. In the Model School and in the University Schools he moulded young men in the most plastic stage of their development. He was a strict disciplinarian whose efficiency and justice won the respect and devotion of his students. He taught the highest moral and religious ideals both by example and precept, and by his physiological instruction gave to growing boys a prophylactic against the assaults of impurity and disease. Dr. Porter carries with him into his time of retirement the gratitude of many generations of former pupils.

The following resigned their positions:

Barker Fairley, M.A., Ph.D., professor of German; H. D. Kay, Ph.D. (Camb.), D.Sc. (Manc.), professor of biochemistry; C. R. Wason, B.A. (Camb.), assistant professor, history of industrial art; C. G. Heard, B.A.Sc., assistant professor, mechanical engineering; F. S. Jarman, D.D.S., associate, dental surgery and anaesthesia; F. A. Mouré, Mus. Doc., university organist.

Professor Fairley has gone to head the department of German in the University of Manchester. He wished to be near to Germany that he might pursue his research work during the long vacation. His book on Goethe was one of the outstanding literary contributions in connection with the commemoration of the great poet's death. His loss is keenly felt.

Professor Kay was chosen to be the head of the National Institute of Research in Dairying near Reading in England, an institution established by the Imperial

Ministry of Agriculture in 1912. That he should have been chosen for this position is one of the greatest tributes that could be paid to Dr. Kay's eminence as a scholar and research worker. Both by the charm of his personality and his power of stimulating research he rendered signal service to our University during his all too short stay in Toronto.

Professor Wason was called to Edinburgh to be lecturer in classical archaeology. Professors Iliffe and Wason who have had charge of our department of classical archaeology have both been chosen for positions of distinction in other parts of the world. Professor Iliffe was selected to be head of the Rockefeller Museum in Jerusalem.

I regret to say that Professor Heard was obliged by ill-health to retire from his work in mechanical engineering. He succeeded Professor Parkin on his appointment to the department of aeronautics at Ottawa. Professor Heard was a sound and helpful teacher.

Dr. Jarman resigned on account of the re-arrangement of the work in dental surgery and anaesthesia, whereby a full-time clinician has been appointed.

After years of service Dr. Mouré, owing to the pressure of other work, felt obliged to resign the post of university organist. His organ recitals had drawn large student audiences throughout the college year. He familiarised the students of the University with the masterpieces of organ music, ancient and modern, and educated the musical taste of successive generations of undergraduates. His familiar figure will be missed from the organ bench at convocations and public lectures. Dr. Healey Willan, vice principal of the Toronto Conservatory of Music, and a noted organist and composer, has been appointed as his successor.

Leave of absence was granted to the following on account of ill-health:

F. B. Kenrick, M.A., Ph.D. (Leip.), professor of chemistry (for Easter Term); A. E. Grauer, B.A. (B.C. and Oxford), Ph.D. (Cal.), lecturer, political economy (for Michaelmas Term); Brig. Gen. G. S. Cartwright, C.B., C.M.G., director of military studies; T. M. Porter, LL.D., instructor, University Schools; and R. Flenley, M.A. (Liv.), B.Litt. (Ox.), professor of history, to study abroad.

The following new appointments and promotions were made during the year:

In the Faculty of Arts:—Appointments: B. A. Griffith, M.A., lecturer in applied mathematics; H. G. Smith, B.A., Ph.D., lecturer in physics; Miss H. Stantial, S.B. (Simmons), M.A., Ph.D., lecturer in chemistry; E. C. Beck, B.S.A., M.A., lecturer in botany; C. C. Bayley, M.A. (Manc.), lecturer in history; C. W. M. Hart, M.A. (Syd.), lecturer in anthropology; G. P. Cosgrave, B.A. (Man.), M.A., Ph.D., lecturer in psychology; H. Boeschenstein, Ph.D. (Rostock), lecturer in German; V. Lange, M.A., temporary lecturer in German.

Promotions:—L. Gilchrist, M.A., Ph.D. (Chic.) from an associate-professorship to a professorship in physics; A. MacLean, B.A., from an associate-professorship to a professorship in geology; G. S. Brett, M.A. (Ox.), from an associate-professorship to a professorship in ethics; St. E. de Champ, B.ès L. (Lyons), O.I.P., from an associate-professorship to a professorship in French; V. W. Bladen, M.A. (Ox.), from an assistant-professorship to an associate-professorship in political economy; W. Line, B.Sc. (Mt. A.), M.A., B. Ed. (Alb.) Ph.D. (Lond.), from an assistant-professorship to an associate-professorship in psychology; J. D. Burk, M.A., from a lectureship to an assistant-professorship in mathematics; H. J. C. Ireton, M.A., from a lectureship to an assistant-professorship in physics; D. G. Creighton, B.A. (Tor.), M.A. (Ox.), from a lectureship to an assistant-professorship in history.

In the Faculty of Medicine—Appointments:—P. J. Moloney, M.A., Ph.D., associate professor in sub-department of chemistry in relation to hygiene; A. W. Ham, M.B., assistant professor in anatomy; C. B. Weld, M.A. (B.C.), M.D., lecturer in physiology; E. T. Waters, B.Sc., Ph.D. (Wales), lecturer in

physiology; R. W. I. Urquhart, M.A., M.D., lecturer in pathological chemistry; M. H. Brown, M.D., B.Sc., lecturer in pathological chemistry; Miss F. Fraser, B.A., M.D., lecturer, hygiene; P. A. T. Sneath, M.D., D.P.H., lecturer, hygiene; J. Craigie, M.B., Ch.B., Ph.D., D.P.H. (St. And.), lecturer in epidemiology.

Promotions:—R. D. Defries, M.D., D.P.H., from an associate-professorship to a professorship in hygiene and epidemiology; D. T. Fraser, B.A., M.B., D.P.H., from an associate-professorship to a professorship in hygiene and preventive medicine; A. M. Wynne, M.A. (Qu.), Ph.D., from an assistant-professorship to an associate-professorship in biochemistry; E. P. Lewis, B.A. (McM.), M.B., from an associateship to an assistant-professorship in psychiatry; D. A. Irwin, M.B., B.Sc., from an research associateship to an assistant-professorship in medical research; the following from senior demonstratorships to associateships in medicine: H. K. Detweiler, M.D.; A. A. Fletcher, M.B.; A. G. McPhedran, B.A., M.B.; F. W. Rolph, M.A., M.D., C.M.

In the Faculty of Applied Science—Appointment:—T. C. Graham, B.A.Sc., lecturer in mechanical engineering.

Promotion:—R. J. Montgomery, B.Sc., Cer. E. (Ohio) from an assistant-professorship to an associate-professorship in ceramics.

In the Faculty of Music—Appointment:—H. Willan, Mus. Doc., university organist.

In the School of Graduate Studies—Appointment:—G. S. Brett, M.A. (Ox.) Dean.

In the Department of Social Science—Appointment:—Miss B. Finlayson, B.A., lecturer.

In the Ontario College of Education—Appointment:—N. Davies, lecturer in methods for specialists in agriculture.

Promotions:—J. A. Long, B.A. (McM.), Ph.D. (Col.) from an assistantship to an assistant-professorship in educational psychology; Miss B. Bassam, B.A. (Qu.), from a lectureship to an assistant-professorship in library science.

The attendance this year reached the unprecedented figure of 8274. This number will probably not be maintained next year. Students resident in Toronto have in some cases entered the University because openings in business and industry were not available. Some graduates have returned to take further courses for a similar reason. In times of depression the value of education as a preparation and equipment for life is increasingly realised. Education is not a matter of charity, but a sound investment.

Financial difficulties have confronted many undergraduates; but they have manfully and resourcefully won through. Their parents have often been less able to help them and they themselves have not been able to find employment in the summer. The Alumni Federation Loan Fund, the Students' Administrative Council Loan Fund, and the Engineering Society Loan Fund have given sorely-needed help to many a student. The Bursary Fund established by the Governors in University College out of the increase in Arts fees this year has been of great service and has helped to equalise the educational opportunities of the city and the country. Special consideration has been given to students whose homes are outside Toronto. In many cases help has been given by members of the staff to worthy students who require a little additional financial aid.

The decrease in the Legislative grant for the current year necessitated a further temporary reduction in salaries. I gladly bear witness to the spirit of ready co-operation of the whole staff with the Governors in the effort to effect all possible economies and so to balance our budget as nearly as possible.

Personally I am grateful for the whole-hearted loyalty and assistance which I have uniformly received from the academic and administrative staffs. Notwithstanding the drastic reduction in expenditure—an experience shared by most institutions throughout the world to-day—the efficiency of the University has not been seriously impaired. There may be a temporary slowing down in some

departments, but better times will bring new opportunities of which the University, I trust, will be ready to avail itself.

Never has the spirit of work been more evident throughout the student body. From the very beginning of the term, the students settled down to hard reading. This is indicated by the increased circulation of books from the University Library. The number of books taken out by students is at least 25 per cent greater than in the previous year. The attendance in the reading-rooms of the central library is as large as ever in spite of the relief afforded by departmental libraries and of the enlarged libraries of the Arts Colleges.

Thanks to the generosity of the Carnegie Corporation, guided in this matter largely by Dr. George H. Locke, the Public Librarian of Toronto, and a member of our University Senate, annual grants have been made for a period of three years for the development of the undergraduate libraries in Canadian Colleges. University College, Victoria College and Trinity College are receiving $15000 each for the extension of their libraries. This grant has made it possible and necessary to establish once more a library in University College. The East Hall, which housed the University Library in days gone by, once more is equipped as a library and reading-room. The undergraduates, who are members of University College, are making extensive use of their new facilities, and so far the pressure on the space of the central reading-rooms is relieved. The Alumnae Association of University College has established an excellent library in Whitney Hall, the women's residence of University College, and has raised $8000 to provide by endowment for the services of a part-time librarian in the Hall and for renewals.

For these alleviations of our library situation we are grateful. But the fact remains that the Central Library is now too small. We need more space and more books. In the scientific departments our laboratory accommodation and equipment are excellent in quality; the Library is the laboratory of the "humane letters". Here, I fear we are in danger of falling short. If we are to keep up with the needs of our research and graduate departments, we must have, as soon as may be, enlarged accommodation and an increase in the number of our volumes. Otherwise we cannot maintain our academic reputation.

Our Librarian, Mr. Stewart Wallace, is getting the utmost out of our present resources; but those resources are now scarcely sufficient to meet our necessities. No benefaction to the University would be more timely, more vitally helpful and more memorable than an enlarged library building and a provision for the purchase of more books, especially for the research and graduate departments. Who will come over and help us?

The enlargements to the Hygiene Building have been completed and the additional accommodation is already occupied. Out of the earnings of the Connaught Laboratories the new wings have been erected at a cost of $380,000. The Provincial Government increased its annual grant to the Laboratories to $17500 and the Rockefeller Foundation with princely generosity has given a further endowment of $600,000. These expansions of building mean an expansion of service to the whole Dominion. Our School of Hygiene serves not only our University and Province, but all Canada. As this University grows in equipment and facilities, so increases its responsibility to be a helper of all institutions in our land. Increasing emphasis is being laid on preventive medicine; our School of Hygiene is a foremost proponent of this advance in medical science and practice.

The Department of Public Health Nursing under Miss Russell's direction has at last realised its hopes of a separate building and an opportunity to improve its courses and to deal with some of the urgent problems in connection with the education of nurses. The Provincial Government has given the use of No. 7 Queen's Park and the Rockefeller Foundation has given $17,500 a year for a term of years. The School has been well-equipped materially and in personnel of staff, and looks forward with confidence to a wider sphere of service.

The enlargement and reconstruction of the Royal Ontario Museum are

practically completed. In the various galleries the objects of exhibit are being put in place. The formal re-opening will be held in the autumn of this year. The connection between the Museum and the University is close and vital. The Directors and Curators of the various departments of the Museum are the professors of these departments in the University. The Museum serves the University in both teaching and research; at the same time its resources are available for the whole province.

The Dunlap Observatory is nearing completion. The structure of the administration building is finished and awaits only its furnishings. The great telescope will probably be set up during the coming year. Through the munificent memorial gift of Mrs. Dunlap the University of Toronto will be equipped to take its place among the chief world-centres of astronomical investigation.

It is gratifying to note, from the reports of the directors of the Health Services, that the health of the young men and women in the University is remarkably good. They come to the University strong and clean, and during their course do not lose this strength and purity. Only two per cent. of the men are unfit for physical training.

Dr. Porter states that in 1930 the average height of 1000 men of the first year was 5 feet 8 inches and the average weight 137 pounds; in 1932 the average height of a thousand freshmen was 5 feet 8¾ inches, and the average weight 140 pounds. This increase he believes to be due to good food and environment.

The new athletic director, Mr. Warren Stevens, has abundantly justified the wisdom of his appointment. His athletic experience makes him an excellent coach and his personal influence is of the best. The whole University rejoices in the well-won success of our athletic teams. The Senior Rugby Team, after some years of defeat borne in sportsmanlike spirit, this year won the Intercollegiate championship.

The various athletic teams which represent the University as a whole are unifying factors in our varied and complex academic life. So too is such an organisation as our excellent Band.

Hart House continues to be a great focus of student life in the University. The Dining Hall has suffered somewhat in patronage, owing to the depression and to the competition of many restaurants in the neighbourhood. The Committees of the House are leaving no effort unturned to make it attractive and helpful. Under the great roof of this institution are housed athletic activities, social activities in the form of various clubs, debating activities, artistic and musical activities and the religious activities of the Students' Christian Movement. The Warden keeps in close touch with the hundreds of students who daily throng the halls and rooms of Hart House. The Students' Administrative Council under the presidency of Mr. Brock McMurray and the wise secretariate of Miss Parkes and Mr. E. A. Macdonald, has rendered constant and constructive service in the various fields of undergraduate interests.

During the year the University has received the following benefactions, totalling $217,208.46:

From the Estate of the late D. A. Dunlap, towards the David Dunlap Building (in addition to giving the site and telescope), $90,000; Eaton endowment, $25,000; Rockefeller Foundation: Child Research and Parent Education, $19,998.39, Public Health Nursing, $17,500, Paediatrics, $9,100; Carnegie Corporation: Educational Research, $11,987.50, Language Study, $11,187.50, Library—University College, $5,868.75; E. C. Whitney Bequest, $7,007.79; Canadian National Committee for Mental Hygiene, for psychiatry, $2,800; Flavelle-Peacock Lectureship: Sir Joseph Flavelle, $1,250, E. R. Peacock, Esq., $1,250; Graduate Fellowships: Sir Joseph Flavelle, $1,000, Estate of the late Sir Edward Kemp, $500, Imperial Oil Limited, $500, Anonymous, $196.06; University Schools Scholarships: Hon. N. W. Rowell for Langford Rowell Scholarship, $2,066.66, Sir John Eaton Memorial, $120; J. H. Gundy, Esq., Wm. E. Wilder Fellowship, $1500; D. A. Dunlap Memorial Scholarship, $1,000;

Faculty of Dentistry: Ash-Temple Scholarship, $250, Ontario Dental Association Fellowship, $250, J. B. Willmott Scholarship, $250; Tracy Scholarship in Philosophy, $666.75; MacLennan-McLeod Prize, $500; Gertrud Davis Exchange Fellowship, $500; University College Alumni Matriculation Scholarship, $500; Robert Bruce Scholarship, $473.72; Sir Edmund Walker Scholarship, $450; President H. J. Cody: H. J. Cody matriculation scholarship, $125, Maurice Cody Matriculation Scholarship, $125, Maurice Cody Memorial Scholarship, $150, Maurice Cody Memorial Scholarship in University Schools, $25; William Southam Memorial Scholarship, $400; Social Science Scholarships: Anonymous, $300, St. Margaret's College Alumnae Scholarship, $75; Gertrude Lawler Memorial Prize, $300; Robert Simpson Company Scholarship, $250; Toronto Brick Company Prizes in Architecture, $200; Boiler Inspection and Insurance Company Scholarship in Mechanical Engineering, $150; George Kennedy Scholarship, $131.32; Sarah Kennedy Scholarship, $131.32; University College Alumnae Scholarship, $100; Maurice Hutton Matriculation Scholarship, $100; J. J. Gibson Matriculation Scholarship, $100; Jardine Memorial Prize, $100; F. W. Jarvis Bursaries, $100; Darling and Pearson Prize in Architecture, $100; Ontario Association of Architects Scholarship, $100; Library Psychology Fund, $67.39; Hon. Charles McCrea for Dent McCrea Scholarship, $50; Canadian Engineer Prize, $50; Dr. R. A. Reeve Prize, $50; Professors Beatty and Pounder for Scholarship in Mathematics, $50; Estate of Lauretta M. Seldon, $48.08; Engineering Institute of Canada Prize, $25; American Society of Heating and Ventilating Engineers, $25; Ontario Medical Association Prize, $25; Tracy Prize in Ethics, $20; St. Margaret's College Old Girls Association for Florence M. Neelands Prize, $20; B.A.A.S. Fund for Prize Books, $17.83; University College Alumnae Prize in English, $10; Professor G. O. Smith, for Fletcher-Johnston Memorial Prize in Latin, $10; Squair French Library Fund, $4.40.

On March 6 a bust of Dante by the well-known sculptor Nino Cloza was presented to the University by the Societa Nazionale Dante Alighieri as a token of appreciation for the great work of the University of Toronto in giving to the Canadian people a knowledge of Italy and of Italian civilisation.

It is with feelings of deep gratitude that I record this list of generous benefactions to the University of Toronto. Although it is a public institution, the child of the Province, and has been splendidly supported by Legislative grants, it has also received innumerable gifts from individual friends. Such munificence is a testimony to the high esteem in which the University is held by great Foundations such as the Rockefeller and the Carnegie, as well as by its graduates and the community at large; it is also a means of lightening the burden of cost which is borne by the State and of providing much needed help and equipment for which public funds could not normally be spent.

An interesting addition to the gallery of university portraits was made this year. Mr. John M. Godfrey, K.C., one of our graduates, brought back from England a photograph of the Hon. Peter Boyle de Blaquiere, the first Chancellor of the newly reconstituted University of Toronto in 1850. From this was painted a portrait by Mr. Allan Barr. Through the generosity of a few friends of the University (and especially of the Hon. Vincent Massey) this was acquired and presented to the University. It now hangs in the Great Hall of Hart House with the Chancellors, Vice-Chancellors, Chairmen of the Board of Governors and Presidents of the past. To complete the list of Chancellors, we need only the portraits of the Honourable Robert Easton Burns, who held the office from 1856 to 1863, and that of the Honourable George Skeffington Connor

During the session the following special lectures were delivered: On the Alexander Foundation a course of four lectures by Professor H. J. C. Grierson, department of English, University of Edinburgh, on "Sir Walter Scott"; two lectures by Professor A. N. Whitehead, department of philosophy, Harvard University, on "The Concept of Civilisation"; two lectures by Sir James Irvine, C.B.E., F.R.S., principal, St. Andrew's University, Scotland, on "The Romance

of a Scottish University", and "Polysaccharides from the viewpoint of the Organic Chemist", two lectures by Dr. R. Ruggles Gates, professor of botany, King's College, University of London, on "Heredity in Plants, Animals and Man", and "The physical basis of Heredity"; a lecture by Professor Johannes Hempel, University of Göttingen, Germany, on "The Trends in Modern German Thought"; three lectures by H. S. M. Coxeter, Esq., Trinity College, Cambridge, England, and Rockefeller Fellow at Princeton University, on "Group Properties of Geometrical Configuration in Higher Space"; a lecture by S. R. K. Glanville, Esq., M.A., Assistant Keeper of Egyptian and Assyrian Antiquities in the British Museum, on "Egyptology and Tutankhamen's Tomb"; a lecture by Professor A. C. Lane, department of mineralogy and geology, Tufts College, Boston, on "The Age of Minerals and Rocks as revealed by the disintegration of Uranium and Thorium"; a lecture by Mr. Richard Finnie, F.R.G.S., Ottawa, on "The Canadian Arctic and its People"; two lectures by Professor Elemer Balogh, Secretary-General of the Academy of Comparative Law, The Hague, on "The Workings of German Constitutional Law" and "The Adaptation of Law to Economic Conditions"; seven lectures by Dr. Ludwik Silberstein, consulting mathematical physicist to the research laboratories of the Eastman Kodak Company, Rochester, N.Y., on "Recent Developments (1916-1932) in the Theory of Relativity"; a lecture by the Marquess of Zetland on "Great Britain in India"; two lectures by Professor R. Coupland, Beit Professor of Colonial History, All Soul's, University of Oxford, on "The Commonwealth of Nations" and "The Coloured Empire"; the Donald C. Balfour Lecture by Emeritus Professor A. Primrose, on "The Interrelation of Anatomy and Surgery"; a lecture by Philip Guedalla, Esq., historian and biographer, on "Wellington"; a lecture by Sir Josiah Stamp, G.B.E., D.Sc., LL.D., Chairman of the London Midland and Scottish Railway, and Director of the Bank of England, on "The Failure of Democracy in Economic Affairs"; a lecture by Dr. C. U. Ariens Kappers, Director, Central Institute for Brain Research, Amsterdam, on "The Meaning of the layers of the ceribal cortex and their appearance on Phylogeny and Ontogeny."

The University as a whole profits from the visits of noted scholars and scientists during the course of the academic year. These distinguished authorities in their several departments meet the members of the staff, the graduate students and the senior undergraduates of the University. The result is a general mental stimulation. We are thus kept in touch with the latest developments in science and scholarship in all parts of the world.

One of the most noteworthy visitors during the year was the poet laureate of England, Mr. John Masefield. He gave a public lecture and readings from his poems in Massey Hall. He dined with the students in the Great Hall of Hart House, and afterwards in the Faculty Union Common Room met the members of the staff in the department of English. Another visitor on the same day was the Marquess of Zetland.

In January we had a visit from a group of twenty-four South African students who came to this country under the auspices of the National Student Federation of America. They brought greetings from our sister Dominion and received in turn our good wishes. Another group consisting of English Public School boys visited the University in the month of September.

Our University is the happy meeting place for various learned societies of this continent and of the motherland. In August there was held in the University a largely attended and successful meeting of the Dental Associations of Great Britain, Canada and Ontario. American representatives also took part in the proceedings. In the same month the Pharmaceutical Botanists of America met. In September the Institute of Mechanical Engineers of London, England and the International Genetic Congress held their meetings here. Perhaps the most notable of the gatherings of the year was that of the American Historical Association, which held its annual meeting for the first time outside the United States. Many scholars of worldwide fame were present, and the Dominion

Government generously loaned a splendid exhibition from the Archives to be displayed for a week or more in Hart House. This interesting collection was visited by thousands of our citizens.

Special Convocations were held: August 11th upon the occasion of the visit of the members of the British-Canadian-Ontario Dental Associations, when honorary degrees were conferred upon: George Northcroft, O.B.E., L.D.S., R.C.S. Eng.; Charles Nelson Johnston, M.A., D.D.S., Albert Edward Webster, D.D.S., M.D.; October 17th when Sir James Irvine, C.B.E., F.R.S., principal of St. Andrew's University, Scotland, received the honorary degree of LL.D.; December 28th in connection with the meetings of the American Historical Association when the degree of LL.D. *honoris causa* was conferred upon Herbert E. Bolton, Ph.D., Litt.D., Sather Professor of History in the University of California; May 26th when the degree of LL.D. *honoris causa* was conferred upon the Honourable H. A. Bruce, M.D., Lieutenant-Governor of Ontario, Sir Josiah C. Stamp, G.B.E., D.Sc., Chairman of the London Midland and Scottish Railway, and Director of the Bank of England, H. A. Garfield, A.B., L.H.D., President of Williams College, H. C. Griffith, M.A., Headmaster of Ridley College, The Very Reverend Gilles Marchand, O.M.I., D.Ph., D.D., Rector of the University of Ottawa, The Very Reverend Edmund H. Oliver, M.A., Ph.D., D.D., Former Moderator of the United Church of Canada and Principal of St. Andrew's College, Saskatoon, Rush Rhees, A.M., D.D., President of the University of Rochester, George F. Rogers, B.A., Chief Director of Education for the Province of Ontario, Carleton W. Stanley, M.A., President of Dalhousie University, Robert C. Wallace, M.A., Ph.D., D.Sc., F.G.S., F.R.C.S., President of the University of Alberta, Howard P. Whidden, B.A., D.D., D.C.L., Chancellor of McMaster University.

The University shares in the honours conferred upon members of its staff: In May Professor E. A. Bott was asked to deliver an open lecture on "Psychology" in the University of London, and three lectures at Bedford College on "Principles of Critical Analysis; Dr. J. G. FitzGerald, Dean of the Faculty of Medicine, was made one of the three vice-presidents of the Health Committee of the League of Nations; Professor E. Goggio was elected Chairman of the Italian Section of the American Modern Language Association; Dr. Roscoe R. Graham was elected second vice-president of the American College of Surgeons; in December Professor V. E. Henderson was elected an honorary member of the Kaiserliche Leopold Carolinische Deutsche Akademie der Naturforcher as a recognition of his scientific work. He was also re-elected Secretary of the American Society for Pharmacology and Experimental Therapeutics, and appointed one of the six members of the Editorial Board of the Journal of Pharmacology and Experimental Therapeutics; Professor O. Klotz was appointed a member of the National Research Council of Canada; Professor G. Norwood was given an honorary D. Litt. by the University of Wales "on the ground of his distinction as a scholar and writer"; W. S. Wallace, Esq., Librarian, was elected chairman of the college and reference section of the American Library Association; Professor T. J. Meek was elected President of the Middle West Branch of the American Oriental Society.

For the current year the chair of classical archaeology has been unfilled. The work in this course has been supplied by members of the classical staff in University College, Victoria College and Trinity College. For the coming year the Board of Governors has appointed as professor of classical archaeology Mr. Homer Thompson, a Canadian, a graduate of the University of British Columbia, who took his postgraduate work in the archaeological department of the University of Michigan—one of the best schools of archaeology on the continent—and who for the past three years has been engaged under the American School of Archaeology in Athens in excavating the site of the Agora and of the Pnyx. So highly are his services esteemed that the American School still desires them for a portion of each year (for a period of three years) and is willing to pay

half his academic stipend. The Trustees of the Royal Ontario Museum have also appointed Professor Thompson curator of the extensive classical collections housed there. We look forward to great developments in classical archaeology under the impetus of his enthusiasm and immediate knowledge of present day excavations.

While conservation and consolidation are especially necessary in these times, we must keep our eyes toward future developments. The academic world is one in which (to use the language of *Alice in Wonderland*) "you have to keep running as fast as you can in order to remain where you are". There are at least four directions in which we must progress.

(*a*) Standards of scholarship at entrance and throughout the course must be maintained. The requirement of honour matriculation for admission to the Faculty of Arts has now been in effect for two years. The results are satisfactory. The quality of work has been improved, and some guarantee is secured that those who come to the University have a serious purpose to work and have the necessary capacity and will to make good use of the opportunities which a University presents.

(*b*) Certain new departments should be established in the University as soon as finances permit. (1) A chair of geography has for some years been under consideration. This subject is at present covered in part by the department of geology and economics; but there is real need for an independent department in which both the geological and economic aspects of the field will be widened and more thoroughly investigated. Such chairs have been established in most of the newer universities in England. If a professorship of geography is established in our own University, I believe it should be linked with the broad department of economics.

(2) A chair in fine arts has been long under consideration. Private benefaction might well supply this need and so serve the aesthetic demands of the whole community. A remarkable equipment within the University is now available for such a department. The extensive collections of sculpture and pottery and industrial art in the Royal Ontario Museum, and the growing collection of pictures in the Toronto Art Gallery provide much illustrative material. In the University itself are the fine collection of art books and photographic reproductions of great masterpieces, presented by the Carnegie Corporation, and now housed in our central library; the extensive sets of coloured reproductions of famous paintings in Hart House, belonging to the Students' Art Club; the numerous photographs of buildings and painting and sculpture distributed throughout University College; and the architectural books, pictures and slides in the School of Architecture. The right man as professor of fine arts could co-ordinate all these resources and make a notable contribution to the artistic life of the University and of the Province.

(3) In Oxford, Cambridge and London, in some Universities of the United States, and in McGill University there are chairs of Chinese. The holders of this chair deal with the languages, literatures, economics, and art of the Far East. With the unique treasures of Chinese art housed in the Royal Ontario Museum and with the prospect of the Museum possessing a Chinese library of 41,000 volumes, this University would seem to be a natural centre of Chinese and Japanese studies. The establishment of a chair of this kind would be a friendly gesture to the populous countries across the Pacific and would not be without a bearing upon the development of closer trade relations with them.

(*c*) There is a third direction in which this University must move and that is in the strengthening and development of our postgraduate work. The spirit of investigation and research must permeate the whole University. The teacher and the investigator will be combined in the one ideal professor; yet some will excel in teaching and others in research. Research will in a measure be carried out both in undergraduate and in postgraduate days; but inevitably there must be some general organisation of advanced studies. This we have had for years

past in our School of Graduate Studies. The number registered in this School this year has reached the highest point in our history. Many graduates, unable to find positions, have wisely returned to the University to take further courses of study and investigation, that they may be the better fitted to seize the opportunities which slowly-returning prosperity will bring. This University welcomes to our School of Graduate Studies not only members of our own University, but members of other Universities in Canada and abroad. As the cost of graduate work is high, not many universities can afford to carry on this type of work to any large extent. The University of Toronto must, therefore, seek in this field to render an educational service to the whole Dominion. Already we are becoming a continental centre of graduate study and research in many fields. Herein lies in the future a special work for this University. We must continue to provide the best undergraduate instruction we can, but we must also for the whole Dominion make provision for adequate and efficient postgraduate instruction and investigation.

(*d*) University Extension and the direction of extra-mural studies have become an integral part of our educational effort. The University seeks to carry the treasures of knowledge and mental stimulation beyond the bounds of her immediate family. Mr. Dunlop, the director of this department, is doing admirable work for the University and for the whole Province. The classes grow year by year. At least five thousand are now receiving from our lecturers continuous instruction; fifteen thousand more attend extension lectures; radio lectures reach all "listeners-in". It is safe to say that through this department of extension the University is reaching 30,000 people a year, outside its academic walls. The possibilities of future service here are almost boundless; and the University, maintaining her high standards and her peculiar "genius", is ready to serve wherever and whenever the opportunity calls.

Last November I attended a conference of Universities held in New York in connection with the centenary of the foundation of New York University. About six hundred delegates were present from the Universities of the United States and Canada. There were also a few outstanding representatives from British Universities. The discussions at this conference and my own experiences in Canada and abroad lead me to make a few general observations on the work of a university.

1. The University is not a seat of self-centred culture, coldly remote from the world of to-day with its problems and struggles. It has its special gift and spirit, but holds these in trust for the community. It has obligations to the social order of which it forms a part. Its obligation begins with the students in the class-room and laboratory, but reaches out to the chief interests of the whole community. It may not seek to deal with these directly, but it does seek to supply the fundamental principles and to train the mental attitudes with which the problems of the community should be faced and solved.

2. The University is the culminating point in the State's effort to provide education for its people. It is part of the whole educational enterprise. Our University is linked with the Secondary and Elementary Schools; it is influenced by them; in turn it exercises an influence upon them. The relations between the University and the Secondary Schools are especially close. The University should not be called on to do work that can better be done in well-equipped Collegiate Institutes and High Schools. The better the training given to candidates for matriculation, the sounder the progress that will be made in the University. The greater the amount of advanced work taught in the Secondary Schools, the higher will be the type of teacher attracted to them.

3. The cost of higher education has markedly increased in recent years. This enhanced cost bears most heavily on the students who reside at a distance from University cities, and who must pay not only the usual fees for tuition, but also the charges for board and lodging. There is a real danger that all Universities may serve chiefly the regions immediately adjacent. Yet some of

the best students come from homes in the country, the village or the small town. To these must be given an educational opportunity in as full measure as it is offered to the city resident. How can this equalisation of opportunity be brought about? As far as we can see, mainly by the establishment of scholarships, bursaries or loan funds which by preference help the young men and women from the districts outside the city. I am glad to say that some of the scholarships recently established and the bursaries offered by University College do give a preference to the outside student. I hope that friends of the University and especially former graduates or groups of alumni will provide an increasing number of scholarships or loan funds. The money invested in helping students of ability and determination brings a rich return both to the giver, the recipient, and the country at large.

4. There is a possibility that the real aim and spirit of a University may be suppressed or forgotten. On this continent the practice favours the inclusion in the University of many faculties of applied science in addition to the historic faculties of arts, medicine, law and theology. In the Universities of the Motherland emphasis is placed on the centrality and supremacy of the liberal arts. The Faculty of Arts remains the cultural heart of the University. Against that background the professional and practical studies are carried on. In these studies the university spirit is seen to be operative, because not merely practice and technique are taught, but the general principles that are underlying. Wherever a real university is found and in whatever century it is examined, it will be apparent that its aim always is to teach the young to think and *to understand the meaning of things in their universal relationships*. This ultimate aim must be kept in view in every faculty and department of a university.

5. The university has four main functions to discharge:

(*a*) It *teaches* the young and the old alike. It always has a place on its staff for the great and inspiring *teacher*. The influence of a teacher's personality is as great as that of his knowledge and power to stimulate intellectual activity. Not stone, brick, mortar, steel, concrete and wood make the university, but the great teachers who constitute its staff. Such must be diligently sought for, adequately paid, and constantly encouraged.

(*b*) It conserves the treasures of wisdom and knowledge handed down from the past, and ever accumulating in the present. This conservation is represented not only by the combined scholarship of the staff, but by the stores in our libraries. I cannot overemphasise the need of an enlarged and enlarging central Library. For postgraduate study especially, this is a vital requirement.

(*c*) It seeks to extend the boundaries of knowledge and by research to add to our stores intellectual. A University like that of Toronto must regard the spirit of investigation and discovery as essential to its very life and growth. With some measure of pride I draw your attention to the various fields of knowledge in which members of the staff are carrying on investigations and to the numerous publications in which they have made known to the world the results of their research.

(*d*) It seeks to make known beyond its halls the rich inheritance of knowledge of which it is the trustee. University Extension work grows apace both in extent and content, and helps the community to realise that the University is glad to be its helper.

6. The New York Universities Conference drew attention to the peril of excessive departmentalism and specialisation in our courses. Is there not a call for greater synthesis, for more unifying principles, for some fundamental philosophy of life?

7. It is probable that there will be greater attention paid to the sociological sciences in the future. The physical sciences will not hold the field alone. Human relationships are really paramount and deserve increased investigation.

8. Even when the physical and social sciences are duly synthesised, they must be supplemented by an apprehension of aesthetic and spiritual values.

Only so will their full significance be found. Without a recognition of the primacy of values, teaching in all departments will be incomplete and largely powerless for life and conduct. The fear of the Lord is still the beginning of wisdom.

9. While academic freedom is rightly held to be essential to true university teaching, academic responsibility accompanies it, and is equally imperative. The teacher to whom freedom is gladly given must realise and practise the responsibility which its possession imposes.

10. The results of education are ultimately revealed and chiefly tested in the choices in life which are made by those who have been educated. It has been well said that "the true jewels of a university are the men who make it and the men whom it makes". The staff and the graduates essentially are the university. The university graduate may be expected to give a fair measure of intellectual leadership in his community. If he cannot or does not do this, he has failed to get the best from his university training. This University would fain believe that no small proportion of its academic sons and daughters have been leaders in all progressive movements, both in the Church and in the State; it recalls with some degree of satisfaction that many of its graduates have given themselves to public life and the official service of their country. Never more than in these days was there a greater need for the well-trained mind, the clear thought, the determined will, the disciplined character which a university training ought to have a share in creating. The student of to-day is being educated for life in a changing world. How difficult is the task! We must be adjusted to changes that actually affect our whole life and outlook; we must take an intelligent part in making these very changes safe and progressive; we must build the new on the foundation of the old in a continuing stability. Can the changes which are inevitable be made conducive to the betterment of human life and not destructive of the finest heritage from the past? We believe they can be so made, and it is the challenge of the changing order that the University should bear its full share of responsibility and obligation in leading mankind through "this valley of deep darkness" into the sunny uplands of righteousness, joy and peace.

All of which is respectfully submitted.

(Signed) H. J. Cody,
President.

December 14, 1933.

APPENDIX A

(1) Report of the Principal of University College.
(2) Report of the Dean of the Faculty of Medicine.
(3) Report of the Dean of the Faculty of Applied Science and Engineering.
(4) Report of the Dean of the Ontario College of Education.
(5) Report of the Secretary of the Faculty of Household Science.
(6) Report of the Dean of the Faculty of Forestry.
(7) Report of the Dean of the Faculty of Music.
(8) Report of the Dean of the School of Graduate Studies.
(9) Report of the Dean of the Faculty of Dentistry.
(10) Report of the Director of the School of Hygiene.
(11) Report of the Librarian.
(12) Report on Research.
(13) Publications.
(14) Report of the Director of University Extension and Publicity.
(15) Report of the Director of the Department of Social Science.
(16) Report of the Director of the Department of Public Health Nursing.
(17) Report of the Director of the Department of Military Studies.
(18) Report of Health Services.
(19) Report of the Warden of Hart House.
(20) Report of the Director of the Connaught Laboratories.
(21) Statement regarding the Museum of Archaeology.
(22) Statement regarding the Museum of Biology.
(23) Statement regarding the Museum of Geology.
(24) Statement regarding the Museum of Mineralogy.
(25) Statement regarding the Museum of Palaeontology.

(1) REPORT OF THE PRINCIPAL OF UNIVERSITY COLLEGE

(Professor M. W. Wallace, M.A., Ph.D.)

I beg to submit to you the following report on University College for the session 1932-1933.

In spite of the continued financial stress, the number of registered students during the past session has been almost as large as during 1931-1932. Some of these were compelled to leave the College before the end of the session, and an unprecedentedly large number had difficulty in paying their fees; some of those who were here last year were not able to return. On the whole, however, the year has passed with less distress than might have been anticipated, a fact which is explained very largely by our ability to grant bursaries to many students who were in need. Many others are scholars on the Leonard Foundation or are the holders of local scholarships. Our own bursaries, however, played the major role in saving many excellent students from the fate of being compelled to leave college. The Scholarship and Bursary Committee have spent much time on the task of making a careful examination of the merits of each application for assistance, and bursaries have been granted only in those cases where need was combined with genuine academic ability.

The general question of providing financial encouragement for able students is becoming more and more urgent. It is unnecessary to say that this is not a problem peculiar to Toronto. The best opinion of the academic world is admirably summarised by the President of the Carnegie Foundation for the Advancement of Teaching in his last Annual Report: "It is essential that every state university or college have an adequate system of scholarships, competitively awarded, which shall be ample in both numbers and amount to prevent both the loss of exceptional talent to the services of society and injustice to the highly competent poor. . . .Society needs the services of such students far more than the students themselves need the university training and the professional career that would follow it. At present there is no assurance that we are fully intelligent in selecting our future physicians, lawyers, engineers and teachers, when high fees and long-continued expense are permitted to operate as factors in that selection."

Fortunately many friends of higher education are well aware of its needs in this respect, and when better days return we may confidently expect that they will come to the assistance of the state. Even during such a difficult period as that through which we are passing, private benefactions have continued to come to University College. The committee responsible for the establishment in 1932 of the Gertrude Lawler Scholarship of $125 in first year English and History have presented to the College an additional sum of $300 to found a prize in English Literature. This prize of $12 in books will be awarded to that student of the pass course who ranks highest in English at the final examinations of the first year. The friends of Professor Tracy have collected a sum of money to establish a scholarship in his honour, and while they have not yet completed their labours, the Tracy Scholarship in Ethics of the present value of $33 is now offered for competition to the students of the fourth year in honour philosophy, and philosophy (English or history). The Women's Undergraduate Association have presented a grand piano to the Women's Union: they had already made a similar gift to each of the three residences of Whitney Hall. The College is already heavily indebted to the generosity of its women graduates, and during the present year they have made notable additions to their former gifts. They have set aside the sum of $8,000 as an endowment for the Library of Whitney Hall, a sum sufficient to provide salary for eight months for a part-time librarian, and to permit of the purchase of new books for the library to the extent of $100 annually. Moreover, they have established a loan fund of $3,200 for women

undergraduates, and have purchased another piano for the Women's Union. It is difficult to express adequately the gratitude of the Council to these ladies for their untiring devotion to the interests of their college, a devotion expressed in such handsome, tangible shape.

The outstanding gift of the year has come to the College through the generosity of the Carnegie Corporation of New York City, and was secured through the good offices of Dr. George H. Locke of the Toronto Public Library. The Corporation has made a grant to the College of $15,000 (payable in three annual instalments of $5,000 each) for the purpose of establishing a Library and Reading Room in the East Hall. The Governors of the College provided the necessary equipment, and as a result of this magnificent gift the East Hall has reverted to its original purpose. The Library was opened with appropriate formalities on Friday, March 17. After a reception in the Senior Common Room, the Governors, members of the faculty, and students adjourned to the West Hall where brief addresses were made by His Honour, the Lieutenant-Governor, the Chancellor, the President, the Librarian and Dr. Locke. The Library was then opened for inspection, and the first requisition form for taking out a volume was filled by Sir William Mulock—just seventy-four years after he had taken out his first volume as an undergraduate in the same room! The College is deeply indebted to Dr. Locke for this magnificent addition to its resources. Already the undergraduates are taking full advantage of a reading-room under their own roof.

The income from the Colonel R. W. Leonard bequest will become available for the establishment of new scholarships during the coming session, although the precise allocation of the funds has not yet been determined.

The Alexander Lectures were delivered in Convocation Hall last November by Professor H. J. C. Grierson of the University of Edinburgh. The lectures dealt with new information that has been discovered regarding the life of Sir Walter Scott, and were intended as a contribution to the centenary celebration. They will be published in the near future by Constable & Company as part of a new Life of Scott on which Professor Grierson has been engaged for several years. The Alexander Lecturer for next year is Professor G. G. Sedgewick of the University of British Columbia.

A course of three public lectures was given during the Michaelmas term by Professor L. A. MacKay on "Plays of Seneca", and a course, also of three lectures, by Professor F. H. Anderson on "Plato's Theory of Education and Poetry". During January, February and March a course of ten lectures was given on Thursday afternoons in the West Hall by as many members of the college staff. The subject of the course was "*National Character as revealed in National Literature*". These lectures were attended by large numbers not only of graduates and undergraduates, but also of men and women not directly connected with the college.

A committee of the College Council, of which Professor F. C. Green was the chairman, has brought together a large amount of information calculated to assist students in choosing their life-work. This information regarding the civil service, publishing, archaeology, librarianships, teaching, scientific research, graduate study, fellowships, etc. has been assembled in a small mimeographed volume, some forty copies of which are available for consultation in the Registrar's Office and the Library. The Council hopes that in this way some genuine assistance may be given to undergraduates in arriving at a decision which many of them are finding it increasingly difficult to make.

Mr. R. L. Ormsby who has just graduated in the honour department of philosophy has been appointed German Exchange Fellow on the Gertrud Davis Foundation for the coming year. Dr. Karl Schott, a member of the staff of the Geographical Institute of Kiel, has been the German representative with us during the present session.

In July the University of Wales will confer on Professor Gilbert Norwood, head of the department of classics in University College, the honorary degree of D.Litt. "on the ground of his distinction as a scholar and writer."

(2) REPORT OF THE DEAN OF THE FACULTY OF MEDICINE

(J. G. FitzGerald, M.D., LL.D.)

The present session has been highly satisfactory from the viewpoint of scientific activity and productive research. It has also been characterised by well balanced team work on the part of all departments of the Faculty of Medicine.

There has been constant endeavour to provide suitable conditions throughout the faculty for original work by members of all departments, graduate students and other suitably qualified persons. At no time in the history of this faculty has there been greater interest in productive scholarship than at present.

Furthermore an open-minded and objective attitude has been much in evidence in the deliberations of the various committees concerned with enquiries into and studies of curricular matters. There has been a determination to spare no effort to provide teaching of a quality which leaves little room for criticism.

There has been, however, no evidence of satisfaction with things as they are either in respect of the length of the present course in medicine, the time available for instruction in the various subjects; the coordination in teaching or even of the content of all courses. To repeat, is the present curriculum of medical study satisfactory from the view point of length of time involved; from the view point of content and emphasis and from the view point of the end product? These are questions that certainly are neither new nor novel but they are as pressing and urgent now as ever they have been in the past. Serious and sustained attention is being given to their solution by the Council of this faculty.

Reference must now be made to the notable increase in registration of students in the first year. No less than one hundred and sixty-seven were enrolled. The highest figure in a decade. Unfortunately too, this large and almost unwieldy number included nineteen students repeating the work of the first year. This serious overloading of a large class with such a high percentage of students having already manifested unsuitability for the medical course has evoked grave concern among the faculty. Constant reference is made to the waste involved in such a procedure. The economic loss is suffered by the State, by the parents of unsuitable students (constant "repeaters") and the students themselves.

Then again the absolute lack of any plan, in this and other countries, to adjust supply of and demand for, medical graduates is worthy of serious consideration. Why should universities in this province continue, at great expense, to train more physicians than are currently needed? There seems at present to be a world-wide over supply and over production of physicians and obviously the remedy for such a state of affairs calls not for hasty and ill-considered action, but for careful, thorough and coordinated investigation here and elsewhere.

Among a number of interesting inter-departmental developments during the year one of the most significant was the organisation of the University of Toronto Physiological Society. Professor Best has made reference to it in the report of his department. No other "medical" science can claim a greater catholicity of interest and appeal (than physiology) and this Toronto development is further proof if such were needed. Professor Henderson has, for many years past, given devoted and unselfish service to the exceedingly important matter of adequate library service and facilities for this faculty. After the provision of trained investigators and reasonable equipment, journals, monographs and sets of periodicals are absolutely essential for progress in this as in all other modern Medical Schools. With declining appropriations, increasingly expensive subscriptions for certain foreign journals and expanding interest in current literature, the Chairman of the Library Committee has had no easy task. Warm and appreciative acknowledgement is here made of this most valuable contribution to faculty welfare. A perusal of reports of the heads of the various departments

reveals clearly great interest in research as well as a suitable appreciation of the importance of providing first-class instruction in all the many and varied courses of study.

The sixth Donald C. Balfour lecture in Surgery was delivered on Lister Day, April fifth, by Doctor Alexander Primrose, Professor Emeritus in Clinical Surgery and until recently Dean of this Faculty. In an exceedingly interesting manner the theme of the address "The Interrelationship of Anatomy and Surgery" was developed. With much wit and charm, the evolution and progress in those sciences was sketched by a lecturer already famed for the skill with which he presents his subject matter. Seldom if ever has Doctor Primrose been heard to better advantage. A large and appreciative audience was in attendance.

The Charles Mickle Fellowship "awarded annually to that member of the medical profession who is considered by the Council of the Faculty of Medicine to have done most during the preceding ten years to advance sound knowledge of a practical kind in medical art or science," was this year awarded by the Senate to Sir Thomas Lewis, C.B.E., M.D., F.R.C.P., D.Sc., F.R.S., for his work on the physiology of the peripheral circulation. The recipient has been invited to deliver a lecture during the next academic session.

Numerous distinctions have, during the year, come to various members of the Faculty. Doctor Herbert A. Bruce, Emeritus Professor in Clinical Surgery, has received the high honour of being appointed Lieutenant-Governor of Ontario. This is the first occasion in the history of the province in which a member of the medical profession has been called to this important office. The Faculty of Medicine extends hearty congratulations and best wishes to his Honour, as his Majesty's representative in the Province of Ontario.

Doctor F. N. G. Starr retiring professor in clinical surgery has served with distinction as President of the Royal College of Physicians and Surgeons of Canada during the present term of office. Doctor Starr has long and faithfully discharged his duties as a member of this faculty. The University is under a debt of gratitude to him for service rendered, first in the department of anatomy and later in surgery. This obligation is acknowledged with gratitude. Doctor Starr's colleagues in this faculty united in tendering affectionate homage and most cordial good wishes.

Doctor H. A. Beatty retires from the department of surgery at the close of this academic session. The University warmly appreciates the services he has rendered for many years. His colleagues in the Faculty of Medicine join in this expression of appreciation of his co-operation at all times, and convey to him their best wishes for the future.

With the retirement of Professor K. C. McIlwraith from the department of obstetrics and gynaecology, there is concluded a long period of splendid service to the University. Doctor McIlwraith has for many years devoted himself to clinical teaching in this faculty and has earned the gratitude of a host of students. His activities are acknowledged with grateful thanks and sincere appreciation.

Doctor Primrose as President of the Canadian Medical Association has during the year rendered fine service to the profession of this country and through them to the Dominion at large. The Dean of the Faculty has for the year 1932 served as one of the three Vice-Presidents of the Health Committee of the League of Nations. Professor Henderson and Professor Best were accorded distinction in election to honorary membership in foreign scientific societies, membership in which is accorded to persons who have made notable contributions to knowledge in their special fields. Professor Klotz has been made a member of the National Research Council of Canada, in which capacity he will have still further opportunity for service. Professor Klotz has also continued to perform highly important duties in a consultant capacity to the Rockefeller Foundation in their world-wide investigations into Yellow Fever.

Post-graduate activities of an extra-mural character have not been neglected during the year. Extension lectures under the aegis of the Canadian Medical

Association to the number of fifty-six were given by seven members of the staff. Furthermore, under the auspices of the Ontario Medical Association, one hundred and twelve addresses were presented in various local centres by sixty-five members of this faculty.

During the year two former members of the University in the persons of Doctor James Brebner and Mr. J. F. Van Every passed away. Doctor Brebner as Registrar, was well known to a host of students of other days and he will long be held in affectionate memory. The death of Mr. Van Every is also deeply regretted and his services are gratefully acknowledged. Mr. H. W. Mickle, K.C., a son of Charles and Ellen Mickle, in whose memory the fellowships bearing their names were established in this University, also died during the year. A loyal friend, his passing is deeply regretted.

In the retirement of Professor J. C. McLennan from the position of head of the department of physics and directorship of the laboratories (now the McLennan Laboratories) the University in general and this faculty especially lost an enthusiastic member and loyal supporter. As well as being an investigator of great distinction, Professor McLennan was also a splendid teacher and his withdrawal from active work here is greatly regretted. Recognition of his services to this faculty is tendered with thanks and appreciation. In the resignation of Professor H. D. Kay, the University suffered a serious loss. Professor Kay an outstanding investigator and teacher left to accept the post of Director of the National Institute of Dairy Research, Reading.

The following appointments and promotions were made in the Faculty of Medicine by the Board of Governors during 1932-33:—

Professor E. F. Burton—to be head of the department of physics and director of the McLennan Laboratories.

Associate Professor D. T. Fraser—to be professor of hygiene & preventive medicine.

Associate Professor L. Gilchrist—to be professor of physics.

Promotions from Assistant to Associate Professorships—P. J. Moloney in hygiene & preventive medicine in the sub-department of chemistry in relation to hygiene. A. M. Wynne in biochemistry.

Promotions to Assistant Professorships—In anatomy—Doctor A. W. Ham; in the Banting & Best department of medical research—Doctor D. A. Irwin; in physics—Mr. H. J. C. Ireton; in psychiatry—Doctor E. P. Lewis.

Doctor G. F. Marrian has been appointed associate professor in biochemistry. He comes to this position from the Institute of Physiology (Department of Biochemistry) in University Hospital Medical School in the University of London. Professor Marrian is a distinguished investigator in the field of the endocrine glands, on the side of their chemical nature. He has made important contributions to knowledge of the subject and he is warmly welcomed as a new member of this faculty.

(3) REPORT OF THE DEAN OF THE FACULTY OF APPLIED SCIENCE AND ENGINEERING

(C. H. Mitchell, C.B., C.M.G., C.E.)

The Faculty of Applied Science and Engineering has again experienced a most gratifying year in its academic work. It appeared early in the session that the students were applying themselves to their studies in a manner more serious and intensive than usual in preceding years.

The session has again been noteworthy by an increased number of students, bringing the registered attendance to a figure the largest in the history of the faculty. There were 913 registered in all departments in the undergraduate

courses, and 52 enrolled in the various departments doing postgraduate work. These are to be compared with 881 and 33 respectively for the previous session.

There has always been a question as to the underlying cause of varying numbers in attendance in this faculty. It may seem paradoxical that in a professional faculty so closely related to the development and activities of the country, there should be a continuously increasing number of students during a period of depression such as has been experienced throughout the past three years. Possibly the well-known reason, so frequently advanced, that in such times of unemployment, students seek the university in large numbers has been a factor, but if so, it has probably but a small influence and does not explain the continued maintenance or the uniform increase in the numbers. It is more likely that the contributing causes lie in the inherent belief that the future of the country, so far as engineering is concerned, is not impaired by the prevailing depression, long as it has continued, and that in due course the demand for engineers will return to normal and probably increase.

There have been no major changes in the curriculum, but the provision for the additional obligatory subject of chemistry for entrance, arranged and announced last year, will go into effect for admission to the next session. In the same manner, a new feature of instruction has been studied and determined upon the past session, whereby optional courses in advanced mathematics and physics will be given next session for the purpose of encouraging and assisting those students who wish to progress ahead of the normal courses in these subjects. In this manner, this faculty is further raising its standards of instruction.

With respect to examination standards, a further step was determined upon by the Council of the Faculty during the session, whereby a higher average of over-all marks will be required for passing each year; this will go into effect for next session's examinations.

The difficult conditions due to lack of accommodation for the large number of students have again prevailed during the session just closed. Not only are there more students, but they have crowded into those departments and are continuing into their upper years, wherein the lack of accommodation is particularly acute. The departments in which this condition presents most difficulties are mechanical and chemical engineering. These departments have been very hard put to it indeed to maintain proper facilities and to give adequate instruction in the important subjects comprised in these branches, and it now appears that in both of them the efficiency is already impaired. This impairment is particularly noticeable in facilities for machine design and for laboratory work of a specialised nature in the upper years of chemical engineering.

For the foregoing reasons, and because there are certain phases of instruction more particularly in these two branches which cannot yet be prosecuted, urgently though they are required to meet the growing demands of the profession, increased accommodation for the faculty is again strongly requested. It is to be hoped that the Board of Governors will keep the urgent accommodation requirements of the faculty constantly before them, so that the continuously pressing situation can be met at the earliest time possible.

Two new bequests in the form of memorials have been made to the faculty for the benefit of undergraduate students; these are gratefully acknowledged. One, known as the Elizabeth Speller Memorial Fund, arranged through the generosity of Dr. F. N. Speller, a graduate of the class of 1893, provides for an income available for loans to worthy students in the third and fourth years. The second is known as the MacLennan-MacLeod Memorial Prize, donated by the Class of 1910 and named for two students of that class who lost their lives in France provides a prize for competition in calculus by students of the first year.

The Engineering Society Loan Fund, which, as reported last session, was provided by the Engineering Society from monies returned to it by the Board of Governors, has proved of the greatest value to needy and worthy students, especially during these difficult times. It is administered by a joint Committee, appointed by the Board and representing the staff and student body.

Another year of the recent depression has passed, with its effect upon the various industrial, construction and other engineering activities of the country. While a year ago there was some expectation that conditions would soon improve, the hope has now become a reality and it is, at the present writing, a well accepted fact throughout the business and financial world, in which the engineering profession is so integral a part, that the depression is over and conditions will improve. The signs point to a slow recovery to normal conditions, although it is a question whether and when they will return to the degree prevailing four or five years ago, and whether, indeed, that was a normal condition.

It has been of great interest to observe the effects of these conditions upon the fortunes of the large graduate body of this faculty, especially those of recent years. A year ago it was reported that by the end of June about 50% of the new graduating class was absorbed in employment of various kinds; this ratio unfortunately was somewhat decreased in the summer, but rose again by winter. Reports to date indicate that this year's graduating class, although considerably larger, is having even better success than that of last year, and this is viewed with no small gratification. The indications are that employment of engineering graduates will now increase, and doubtless will accelerate as the year progresses. It is interesting to note that, so far as this year's class is concerned, the greatest demand at present is for mechanical, mining, and chemical engineers.

The work of the School of Engineering Research has continued satisfactorily during the session, although there has been some abatement, due to both shrinking research funds and pressure of instructional work occasioned by the large number of students in the regular courses. While no new researches have been undertaken, many important ones have been completed or brought to such a stage that they can be left for the present. It is with regret that the School of Engineering Research realises it must face a period of curtailment of its work, due to lack of funds with which to continue on much needed researches and on subjects which are calling for attention in the fields of applied science. It is strongly hoped and urgently requested that as soon as possible, funds may be made available to continue its programme of work so as to maintain the high reputation the School has attained in these fields. A detailed report of these researches which have been prosecuted during the past year is submitted as of this date.

As this session concludes, it is with the greatest regret that the faculty and staff face the retirement of Professor A. T. Laing, who has been a member for nearly forty years. First as a demonstrator and lecturer, then for a very long period as secretary of the faculty, and latterly as associate professor of highway engineering, he has served the University long and faithfully, and has earned a high reputation in these capacities. He has gained, as well, the admiration of his colleagues for his invaluable help and cooperation in faculty affairs.

(4) REPORT OF THE DEAN OF THE ONTARIO COLLEGE OF EDUCATION

(*Dr. Wm. Pakenham*)

The registration of the session, 1932-33, was the highest in the history of the Ontario College of Education. Inclusive of the extra-mural students the total number was 1101 as against 926 in 1931-32. This registration created two difficult situations. In the first place the College of Education was unable to provide accommodations and equipment and the daily work of the session was seriously handicapped. In the second place the students who were successful in securing teachers' certificates were far more numerous than the available teaching posts, and many are now without employment after five years of college work.

During the session the Department of Educational Research made much progress with its test-making programme in the distribution of more than 120,000 copies of various tests throughout Canada for preliminary trial runs. Through its director, moreover, the department shared in a detailed survey of the school system of Forest Hill village. The Forest Hill school board has already begun to act on the recommendations of the survey.

The College of Education suffered two severe losses during the session. Mr. J. F. VanEvery, B.A., B.Paed., instructor in English and History in the University of Toronto Schools, died on June 16, 1933, after a year's illness. Mr. VanEvery joined the staff of the Schools in 1921 after very successful teaching experience in Napanee, Owen Sound and Toronto. In scholarship and professional skill he was unusually efficient. His interest in the social and literary activities of the pupils was sustained and stimulating. In his passing the Schools have lost an able teacher and the staff a loyal colleague and friend. Dr. T. M. Porter, instructor in the University of Toronto Schools, whose health began to fail during the session, retired at the end of the academic year. Prior to the establishment of the University Schools, Dr. Porter had won many honours as a Public School teacher, and especially as a mentor of boys. For more than twenty years he gave to the Schools whole-hearted zealous service which commanded the admiration of the teachers of Ontario, the esteem of the citizens of Toronto and the love and respect of the boys of the Schools. The University of Toronto recognised with its honorary degree the work and worth of this unique teacher of junior boys. Hundreds of Old Boys of the University Schools and of the Toronto Model School remember Dr. Porter as their great teacher, and, above all else, as their great guide, counsellor and friend. Every colleague who has served with him remembers with gratitude his loyalty and constancy.

(5) REPORT OF THE SECRETARY OF THE FACULTY OF HOUSEHOLD SCIENCE

(Dr. C. C. Benson)

The work of the Faculty of Household Science has proceeded during this session much as had been expected.

Owing to the change in entrance requirements for the Faculty of Arts, we have again had a small registration in the first year, since many students came to us previously without taking Latin of honour matriculation. A further decrease in registration has also resulted from the requirement for passing of a total of 60% of all possible marks, which we have imposed for all years after the first.

The total registration has been 124, as compared with 179 for the session of 1931-1932. Of these, 60 students were in the fourth year, so that we have had a large graduating class and so expect a still smaller registration next year.

Even with the smaller registration, there has still been considerable congestion in the Household Science building, owing to the large registration in the Faculty of Arts. With the still smaller numbers likely to come into this faculty next session, we trust that there will be satisfactory accommodation.

The higher standards for entrance and for passing, have, undoubtedly, improved the grade of work done by the students and they should thus leave us better qualified to become dietitians, teachers or heads of households. On the other hand, the difficulty in finding work at this time, has caused several students who had failed to complete their studies in earlier years, to return to repeat the year's work and in some cases, with disastrous results. Still other students have come to college only because work of other kinds was not available and they, too, have not been able to reach the standard set. We have thus to report an unusually large number of failures in examinations—failures which are due, in most cases, to the inability of the candidate to reach the 60% of total marks.

We have again had a number of graduates of Macdonald Institute, who have come to complete with us the work for a degree in household science. The group has, this year, been large enough to allow us to treat them as a separate unit for part of their studies, which has been a satisfactory method and has offered them better training.

We have had good service from all members of the staff, both members who have been here previously and others who have only been appointed this year. We are sorry to be losing Miss Iva Courtice, of the Household Science department, who leaves us to be married, and Miss Ruth Briggs, who will be much missed from the office.

(6) REPORT OF THE DEAN OF THE FACULTY OF FORESTRY

(Dr. C. D. Howe)

From an academic standpoint this has been a successful year. The number of students has not materially decreased from that of the preceding year and the standard of scholarship has been maintained, in fact it has been higher in the upper years than usual. The curriculum has been strengthened by the addition of four new courses: calculus and analytical geometry in the first year; forest description in the third year; English and hydraulics, one term each in the third year. These courses were selected as the result of a ballot submitted to the alumni.

Concerning the employment of this year's graduates, there is little to report, only one having thus far obtained forestry work. It may be said, however that the men are accepting the impasse in the development of forestry work quite philosophically. Whatever other lines of work they may be forced to take up, they are determined to follow their profession as soon as opportunity offers.

(7) REPORT OF THE DEAN OF THE FACULTY OF MUSIC

(Dr. E. C. MacMillan)

During the session 1932-33 the number of students registered was 39. In the course leading to the degree of bachelor of music, 11 registered in the first year, 7 in the second year and 17 in the third year; occasional students, 4.

The following lectures were given by members of the faculty of music:

ERNEST MACMILLAN, ESQ., B.A., Mus.Doc.:
January 9—"Elementary Harmonisation of Melodies" (1st and 2nd years).
January 16—"Elementary Modulation" (1st and 2nd years).
January 23—"Structural Principles in Haydn, Beethoven and Brahms" (All years).
January 30—"Figuration of Pianoforte Writing" (2nd and 3rd years).
February 6—"Structural Principles in Bach and Wagner" (All years).
February 13—"Elementary Fugal Construction" (2nd and 3rd years).

H. A. FRICKER, ESQ., M.A., Mus.Doc.:
For Students of All Years—
January 6—"Shakespeare and Traditional Music."
January 13—"Music in Shakespeare's Time."
January 20—"The Orchestra, Past and Present."
January 27—"The Cantatas of J. S. Bach."

L. SMITH, ESQ., Mus.Bac.:
February 3—"The Mozart Requiem" (3rd year).
February 10—"Modulation at the Keyboard" (3rd year).
February 17—"The Schumann Quintet" (2nd year).
February 20—"Melodic Extension" (All years).
February 24—"Counterpoint" (2nd and 3rd years).
February 27—"Elgar and the Cockaigne Overture" (2nd and 3rd years).

The appointment of Dr. Healey Willan as university organist in succession to Dr. Mouré is a very fortunate one. Since his appointment, Dr. Willan has given three recitals on February 14th and 28th and March 14th. A series of public concerts has been given by conservatory artist students in the Eaton Auditorium. At two of these the Conservatory Orchestra, under Mr. Donald Heins, took part with conspicuous success. The orchestra also appeared at the annual closing concert on May 2nd. The Conservatory Choir has made three appearances with the Toronto Symphony Orchestra, first, in a Wagner Concert on December 6th, secondly in Beethoven's Choral Symphony on March 21st, and finally in a special concert on April 4th, at which the principal works were Dyson's "Canterbury Pilgrims" and Constant Lambert's "The Rio Grande", the former being given for the first time in America. An admirable series of concerts by the Conservatory String Quartet has been well attended, and numerous students' recitals have been given in the halls of the Conservatory.

Mr. J. L. Richardson is continuing his series of carillon recitals from the Memorial Tower during the summer months. The Sunday evening and Friday afternoon concerts arranged by the Music Committee of Hart House have once more proved themselves a valuable factor in stimulating interest in music among university students.

The number of candidates entering for the examinations of the Toronto Conservatory of Music for the present season has been 14,595 as compared with 17,262 for the season 1931-32. Entries for the year were distributed as follows: Piano, 7,581; violin, 453; singing, 325; sight-singing, 27; organ, 21; violoncello, 4; elocution, 22; theory, (rudiments, history, harmony, counterpoint, form) 6,162.

(8) REPORT OF THE DEAN OF THE SCHOOL OF GRADUATE STUDIES

(Professor G. S. Brett)

During the session 1932-1933 the number of students registered in the School of Graduate Studies was 731, an increase of 74 over the total of the previous year. While the total continues to increase annually the rate of increase was reduced this year from 114 to 74. The number of students who were resident in the Province of Ontario increased from 497 last year to 550 this year: this total includes 336 from Toronto as compared with 291 last year. The remainder was distributed as follows:—26 from Wentworth, 22 from York, 18 from Carleton, 17 from Wellington, 10 from Middlesex, 8 from Brant, 8 from Perth, 8 from Waterloo, 7 from Oxford, 6 from Simcoe, 5 from Huron, 5 from Lincoln, 4 from Essex, 4 from Halton, 4 from Hastings, 4 from Kent, 4 from Lanark, 4 from Nipissing, 4 from Ontario, 3 from Bruce, 3 from Grenville, 3 from Grey, 3 from Kingston, 3 from Leeds, 3 from Peterborough, 3 from Renfrew, 3 from Victoria, 2 from Elgin, 2 from Fort William, 2 from Frontenac, 2 from Haldimand, 2 from Lambton, 2 from Peel, 2 from Prince Edward, 2 from Welland, 1 from Dufferin, 1 from Muskoka, 1 from Norfolk, 1 from Northumberland, 1 from Thunder Bay, 1 from Temiskaming. Students from other Provinces of Canada were distributed as follows:—27 from Manitoba, 23 from British Columbia, 21 from Nova Scotia, 21 from Saskatchewan, 13 from New Brunswick, 10 from Alberta, 8 from Quebec, 3 from Prince Edward Island. In addition to these 28 came from the United States and 27 from other countries, including Great Britain (7), India (2), other countries (18). Of the whole number of students registered 447 had taken their first degree at the University of Toronto; 187 held staff appointments during the time they were registered. The number of institutions represented in the Graduate School was 64.

	Men	Women	Total
Candidates for Ph.D.	140	22	162
Candidates for M.A.	144	88	232
Candidates for M.S.	8	..	8
Candidates for M.A.Sc.	32	1	33
Candidates for M.Arch.	2	1	3
Candidate for C.E.	1	..	1
Candidate for E.E.	1	..	1
Candidate for Mech.E.	1	..	1
Candidate for M.E.	1	..	1
Candidates for D.Paed.	90	17	107
Candidates for M.Sc.F.	5	..	5
Candidates for M.S.A.	17	..	17
Candidates for M.Sc. (Dent.)	6	..	6
Candidates for D.V.Sc.	3	..	3
Candidates for Mus.Doc.	4	..	4
Graduate students	84	63	147
	539	192	731

The distribution of the students according to their major study was as follows:—Anatomy, 1; applied mathematics, 4; anthropology, 2; architecture, 3; biochemistry, 20; biology, 35; botany, 29; chemistry, 35; chemical engineering, 14; civil engineering, 8; classics, 12; dentistry, 6; educational theory, 5; electrical engineering, 11; English, 54; epidemiology and biometrics, 2; food chemistry, 3; forestry, 7; geology, 16; Germanics, 6; history, 36; household science, 6; hygiene and preventive medicine, 5; law, 16; mathematics, 11; mechanical engineering, 7; metallurgical engineering, 3; mineralogy, 5; mining engineering, 5; music, 4; pathology and bacteriology, 9; pathological chemistry, 6; pedagogy, 107; pharmacology, 2; philosophy, 51; physics, 32; physiology, 7; political science, 33; psychiatry, 1; psychology, 53; romance languages, 27; semitics, 13; surgery, 8; veterinary science, 3; special committee, 8.

The statement of the number of students recommended for degrees this year is as follows:—Ph.D. 32; M.A. 112; M.S. 1; M.A.Sc. 20; C.E. 1; M.E. 1; E.E. 1; D.Paed. 5; M.S.A. 6; D.V.Sc. 2; Mus. Doc. 1.

Fellowships: The Scholarship Committee had at its disposal this year only four fellowships, as some of the donors notified the School that they were unable to continue the donations during the present economic conditions. In addition to the four regular fellowships of $500. a sum of money was available made up of the unpaid balance of one fellowship, resigned during the year, and of a small donation given anonymously. This sum amounted to $363. The names of the successful candidates, their original universities and the departments in which they propose to work are as follows:—

P. C. F. Guthrie, B.A. Manitoba, department of classics.
T. A. Goudge, B.A., M.A. Dalhousie, department of philosophy.
G. N. Patterson, B.Sc. Alberta, department of physics.
S. Weinstein, B.Sc., M.Sc. Saskatchewan, department of biochemistry.
(Special grant) H. E. Conrad, A. B. Brown, M. A. Clark, department of history.

Appointments to other fellowships made by the Committee of the School were as follows:—

The Alexander Mackenzie Research Fellowships: B. Borsook, B.A. Toronto, department of political science; G. E. Britnell, B.A. Saskatchewan, department of political science; A. D. Lockhart, B.A., M.A. Queen's, department of history.

Appointments to other fellowships open to graduate students have been made as follows:—

The University of Toronto War Memorial Fellowship: L. E. Jones, B.Sc. Manitoba, department of mechanical engineering; J. R. Baldwin, B.A. McMaster, department of history; D. Beall, B.A. British Columbia, department of biochemistry.

The Nipissing Mining Company Research Fellowship: J. W. Johnston, B.A.Sc. Toronto.

The Maurice Cody Fellowship: Miss B. A. M. Ratz,

There are fellowships and scholarships awarded to graduate students which are not controlled by the Committee of the School but are awarded by the faculties or departments concerned to the students whom they nominate. It would seem desirable that these should be consolidated in one list, especially as the announcements are included in the Calendar of the School. When allowance has been made for these additions, it still remains true that one of the major deficiencies of the School is the lack of an adequate number of fellowships or scholarships to enable the most promising students to pursue graduate studies. There were this year 67 candidates for the six available open fellowships (including the two Alexander Mackenzie Fellowships) and such a large number of applicants, in most cases highly qualified, made the lack of resources painfully obvious. Some consolation may be derived from the notable success of our graduate students in obtaining assistance from other sources. Among these may be noted W. J. O'Meara (department of philosophy, St. Michael's) who obtained a Sterling Fellowship at Yale University; A. A. Brant (department of physics) awarded a fellowship at Princeton University; J. F. Allen (department of physics) awarded a fellowship by the National Research Council of the United States; J. P. Blewett (department of physics) awarded a fellowship at Princeton University; Miss E. J. Allin (department of physics) awarded one of the fellowships in the gift of the Royal Society of Canada; J. R. Daniells (department of English) also awarded a fellowship of the Royal Society of Canada; T. H. Jukes (department of biochemistry) awarded a fellowship in Medicine at the University of California by the National Research Council of the United States; W. R. Graham (department of biochemistry) has received an appointment on the staff of the National Institute for Dairy Research of Great Britain.

This list is probably very incomplete, as there has been up to the present no method of obtaining reports from all sources of such external awards as are here represented: an effort will be made to keep a record of them in the future as they provide a significant comment on the status and progress of the work carried on in the field of graduate studies. Toronto is one of the two Canadian Universities included in the Membership of the Associated Universities of America. The Dean attended the annual meeting held in November 1932 at Iowa City. The Association accepted an invitation from the President of the University to meet in Toronto as soon as existing arrangements would permit.

(9) REPORT OF THE DEAN OF THE FACULTY OF DENTISTRY

(Wallace Seccombe, D.D.S.)

The past year in the Faculty of Dentistry has been one of marked progress. Our registration of students from various points in Canada was slightly more than the previous year. There were also in attendance one student from British West Indies, one from Australia, one from New Zealand, and seven from United States. Of the Canadian students, thirty-six were from Western Canada.

Ten candidates were registered for graduate study proceeding to the degrees of Bachelor and Master of Science in Dentistry and one candidate proceeding to the degree of Master of Arts. Twenty-six dental nurses were in attendance of whom twenty-four were reported to the Royal College of Dental Surgeons of Ontario as having successfully completed the dental nurses' course.

The Johnston Dental Clinic has been rendering an unusual service to blind citizens and has received the generous support of the Canadian National Institute for the Blind. It has been decided, however, that this clinic should be discontinued temporarily owing to the difficulty of the Institute to finance the clinic during the coming year.

The Department of Health Orthodontia Clinic for School Children has been further developed during the session and is being carried on under the supervision of Professor Corrigan. This clinic is supplying a much needed dental service to children whose parents are unable to pay regular dental fees.

An outstanding event during the year was the establishment of suitable quarters in the Dental Building for research work in the department of dental pathology under Professor Harold K. Box. It is anticipated that during the coming session there will be organised a group of dental graduates who will devote two hours a day to dental research in this laboratory and Dr. Box has consented to assume responsibility for them.

During the past year at the request of the Academy of Dentistry of Toronto, quarters were set aside for the conduct of a dental clinic for Toronto citizens who were on public relief. This clinic was carried forward upon a co-operative plan, and successfully cared for a large number of indigent people who otherwise would have been entirely without much needed dental attention.

(10) REPORT OF THE DIRECTOR OF THE SCHOOL OF HYGIENE

(J. G. FitzGerald, M.D., LL.D.)

This, the sixth annual report of the work of the School of Hygiene, is a review of activities for the academic session 1932-33.

Reference must first be made to the completion of the extensions to the Hygiene building. It may be recalled that the construction of the original building begun in October, 1925, and completed in January, 1927, was made possible by the benefaction of the Rockefeller Foundation. The sum then provided for the purpose was four hundred thousand dollars. An additional contribution of two hundred and fifty thousand dollars was given for the endowment of the departments of the School. Rapid increase in the number of students registered in the various courses and expansion in the volume of the work of the University Section of the Connaught Laboratories (housed in the Hygiene building) soon made it clear that additions to the building were necessary.

In the spring and summer of 1931 a substantial unit was added to the south wing of the building to provide much needed accommodation for the insulin plant in the University Section of the Connaught Laboratories. The cost of this extension was just over eighty-five thousand dollars. This sum was paid out of the surplus of the Connaught Laboratories. Early in 1931 negotiations with the Rockefeller Foundation and with the Government of the Province of Ontario led the Connaught Laboratories to agree to furnish additional funds necessary for a northerly extension of the School of Hygiene building which, when completed, would add approximately eighty per cent additional space to the building. This has now been completed. The total contribution of the Connaught Laboratories in these undertakings can not as yet be finally stated. Already, however, approximately three hundred and thirty-six thousand dollars has thus been expended and there remains a small balance to complete the cost of the extension, which also will be met by the Connaught Laboratories.

In a word, the Connaught Laboratories has, within the last two years, provided a sum in excess of four hundred and fifty thousand dollars for building purposes and this, added to the contribution of the Rockefeller Foundation (four hundred thousand dollars) has made possible the construction and equipment of the hygiene building without any expense whatsoever to the University. Furthermore, a subsequent contribution of six hundred thousand dollars by the Rockefeller Foundation has brought the endowment of the School up to a total of eight hundred and fifty thousand dollars. Three of the departments of the School, namely, epidemiology and biometrics, physiological hygiene, and chemistry in relation to hygiene, are supported entirely by income from Rocke-

feller Foundation endowment. This is supplemented in respect of various research projects carried on in those departments by grants made by the Connaught Laboratories.

On June thirtieth, 1933, the Department of Public Health Nursing ceased to be a department in the School of Hygiene and became a unit in the School of Nursing. With the opening of the session 1933-34, therefore, the School of Hygiene will consist of the departments of epidemiology and biometrics, physiological hygiene, hygiene and preventive medicine and the sub-department of chemistry in relation to hygiene.

As in the past, all graduate and undergraduate instruction in hygiene, public health and preventive medicine will be carried on in this school. Research and investigations in the general fields of bacteriology, biochemistry, physiology, epidemiology, biometrics, chemistry in relation to hygiene and general public health will be another responsibility of the staff of this organisation.

It may again be recalled that the University Section of the Connaught Laboratories is accommodated in the Hygiene building and the resources and equipment thus made available to both staff and students in the School of Hygiene is of inestimable value.

It is again a pleasure to report a large registration in the courses leading to the diploma in public health. Students from many of the Canadian provinces have been in attendance. Beginning with the session 1927-28, in the six years ending at the close of the present session, no less than sixty-four graduates in medicine have completed the curriculum leading to this diploma. Twenty-five of these post-graduate students have come from the Province of Quebec. All the other provinces have also had their quota of students proceeding to the diploma in public health in these years. Graduates of the School now occupy many important public health positions in various parts of Canada. The deputy ministers of health of the Provinces of Manitoba, Saskatchewan and Alberta, as well as the medical officers of health of Victoria, Vancouver, North Vancouver, British Columbia; Edmonton and Calgary, Alberta; and the whole-time health units of Red Deer and High River, are all recent graduates of this School. In the Province of Quebec twenty-four of the twenty-eight whole-time health units established in the past six years in that province are in charge of graduates of the School. Other former students are in the service of various universities and of the Rockefeller Foundation.

From the above it seems clear that the establishment of the School six years ago in this University, has provided an opportunity for service, international as well as national in its scope.

During this period also a number of candidates have completed the requirements for the degrees of Doctor of Philosophy and of Master of Arts. This academic work of high quality and much importance, has gone on side by side with the professional training of those entering the public health field. In almost every year since the opening of the School, students proceeding to higher degrees in biology have participated in laboratory and other courses in this School. During the present session these number eight in all. Many of these candidates for the degree of Doctor of Philosophy took, as one of their minor subjects, public health bacteriology. The usual laboratory and lecture courses for undergraduate students in the fifth year in the Faculty of Medicine have been carried on.

It is a pleasure to again acknowledge the indebtedness of the School to members of the Department of Health, Ontario, and of the Department of Public Health of the City of Toronto for most generous cooperation and assistance in the conduct of field courses, not only for undergraduates in medicine but for various groups of graduate students. Similar acknowledgement of indebtedness is made to various business organisations, agencies and individuals who have also kindly participated in this work. The public health and social resources of the community have, as far as time has permitted, been brought to the attention

of these students in order that public health in its broadest aspects, as well as social work, might be better understood by all those registered in the School.

Rockefeller Foundation Fellowships and Connaught Laboratories Fellowships have again been enjoyed by nine and one students respectively. It should be emphasised at this time that these fellowships have enabled a very large number of well-trained physicians to qualify themselves for responsible duties in the public health field.

As in previous years large numbers of students enrolled in public health nursing and extension courses have received instruction, both laboratory and didactic, in public health. Lecture courses for undergraduate students in the Faculty of Arts (Household Science) and for those in the Department of Social Science have also been offered. The usual details of registration are set out in the following table.

	1927-28	1928-29	1929-30	1930-31	1931-32	1932-33
A. *Graduates*						
Candidates for diploma in public health	7	11	13	16	16	12
Candidates for degree of M.A.	2	2	2	1	2	3
Candidates for degree of Ph.D.	3	4	5	4	6	5
Candidates for degree of M.A.Sc.	...	...	...	...	2	...
Occasional students	3	1	...	...	1	8
B. *Students in public health nursing*						
Candidates for diploma	53	31	41	22	13	15
Candidates for certificate	...	...	...	26	29	31
C. *Undergraduates*						
Faculty of medicine, 5th year	109	112	124	154	121	115
Faculty of household science, 3rd year	63	65	35	65	64	67
Faculty of arts, 3rd year	...	...	...	...	41	37
Department of social science	28	36	...	16	37	36
Department of university extension	58	82	45	43	60	13
	326	344	265	347	392	342

Research and investigations carried on by members of the teaching staff in the departments of this School (other than public health nursing) will be found in the report of the Director of the Connaught Laboratories. This is in accordance with the practice followed in previous years.

We have again been privileged to welcome visitors from many countries in various parts of the world. These guests have come to see something of the activities both of the School of Hygiene and of the Connaught Laboratories. They have remained for varying periods of time and have come from Australia, Brazil, Ceylon, China, Czechoslovakia, Dutch East Indies, Egypt, England, Sicily, United States of America.

(11) REPORT OF THE LIBRARIAN

(W. S. Wallace, Esq., M.A.)

I beg to submit the following report on the work of the University Library for the year ending June 30, 1933.

The number of volumes added to the Library during the year has been 13,301, and the number of pamphlets 6,720, making the total number of accessioned volumes in the Library 289,128, and the total number of pamphlets 107,291.

The following are the statistics of the use of the Library by undergraduates, in comparison with previous years:

	1921-22	1926-27	1931-32	1932-33
Day books	41,928	106,485	154,814	167,315
Night books	18,998	39,779	78,745	88,126
Week books	4,782	13,104	22,890	24,158
Totals	65,718	159,278	256,449	279,599

Until seven years ago no figures were kept for the circulation of books at the professors' and graduates' register; but since that year an accurate account has been kept, and I am now able to give the figures for the total circulation in the Library during recent years:

Total circulation	1926-27	1928-29	1930-31	1931-32	1932-33
To undergraduates	159,278	182,285	231,759	256,449	279,599
To professors and graduates	20,000	28,740	37,388	40,468	39,673
Totals	179,278	211,025	269,147	296,917	319,272

These figures are exclusive of the books taken for consultation from the reference shelves, of which 30,442 have been replaced on the shelves by the Library assistants during the year.

This further increase in the use of the University Library—an increase of approximately ten per cent., which comes on the top of similar increases during recent years in a sort of geometrical progression—would have created a very difficult situation, because of the congestion at the main delivery desk of the Library, had it not been that a fortunate gift from the Carnegie Corporation has provided a means of relief. In the autumn of 1932, Dr. George H. Locke, the Chairman of the Canadian Advisory Committee on College and University Libraries appointed by the Carnegie Corporation, advised the President that the Carnegie Corporation was prepared to make to the University, under certain conditions, a grant of $5000 a year for three years for the purchase of books for the use of undergraduates of University College, as distinct from other arts colleges in the University, to the libraries of which separate grants were being made. This grant made possible the establishment of a library for undergraduates in University College—something which the College had lacked since the fire of 1890; and it is an interesting fact that this new library has been opened in the East Hall, the room in which the first library of the University and University College was housed prior to 1890, and which now returns to its original use. At the same time, besides providing better library facilities for the undergraduates of University College, the new arrangement will, it is hoped, relieve the pressure on the main delivery desk of the University Library, and enable the University Library to devote its energies more to the performance of its proper function in a university of colleges—namely, meeting the needs of the advanced student and research worker.

Similarly, a grant from the Rockefeller Foundation has enabled the new School of Nursing to establish a departmental library in its new home in Queen's Park; and it is hoped that this library may relieve somewhat the pressure on the Medical Reading Room in the University Library.

Despite the relief provided by these generous and welcome gifts, however, the situation in the University Library remains most difficult and critical. Even though the congestion at the delivery desk and in the reading-rooms of the Library may be somewhat abated, the congestion of books in the stack-room grows more serious every month. With a view to relief the Library Committee has approved of the policy of converting the Reserved Book Reading Room in the Library (the books in which have been transferred to University College) into a Law Reading Room, to which all the law books in the stack-room would be removed; but funds are not at present available for opening this reading-room, and in the meantime the only means at the disposal of the Library Staff for relieving the congestion of books in the stack-room is to withdraw certain books or periodicals from circulation, and place them in storage.

During the coming year, it will be necessary for the Library to retrench in various ways. The reduction in the annual appropriation of the Library will entail a cut of at least 10 per cent. in the appropriations voted by the Library Committee for the purchase of books and periodicals; and the reduction in the appropriation for binding has made it imperative that the Library should not for the present subscribe to any new periodicals, unless these are substituted for

periodicals that are dropped. The decrease in the appropriation for occasional assistance, in the face of a constantly growing circulation, has made it necessary to suspend entirely certain bibliographical work being done by members of the Library staff, to curtail somewhat the reference service offered by the Library, and to ask the Library staff to take over the administration of the Library in the evenings—a service hitherto performed by graduate students.

Once again I desire to bring to your attention the loyal and effective service being rendered the University by my assistants on the staff of the Library, under a steadily increasing pressure of work, and on salaries which, although never adequate for workers of a professional character, have recently suffered serious deductions.

(12) REPORT ON RESEARCH

Anatomy, under direction of Professor J. C. Boileau Grant

Dr. M. Appel, as the Richardson Fellow, investigated the relationship of the minute structure of the parathyroid gland to various degrees of physiological activity. He studied in particular the changes that occur in the cells after the administration of massive doses of vitamin D, and found them marked twenty-four hours after the ingestion of the vitamin. These observations have bearings on the problem as to whether or not this vitamin acts through the parathyroid mechanism.

Dr. M. H. Book is conducting an investigation into the minute anatomy of the renal corpuscle, with special reference to the arrangement of the blood vessels and to the secreting area of the glomerulus. A reconstruction of a glomerulus forms part of this problem. In the course of the work a method has been devised for measuring the area of irregular surfaces of microscopical structures.

Dr. H. Burnham has continued his investigations into the blood supply of the nasal mucous membrane.

Dr. H. A. Cates has for the past year been making a statistical survey of the body proportions of over 700 newly born infants and their parents. This survey has been in progress for two years and has involved the taking of over 50,000 measurements. It has been carried out in conjunction with the department of obstetrics and gynaecology. The first of a series of publications is now ready for print. It deals with the phenomenon of growth,—its rate, sex differences and the relationship between birth and maturity. The question of the rate of growth in the foetal period and its influence on early post natal life are also discussed.

A further study has been undertaken and is now nearing completion. It concerns the variability of the inclination of the pelvis, its differences according to sex, its alteration accompanying pregnancy and its re-establishment following labour. Dr. Goodwin has published a paper on a new instrument for measuring accurately the inclination of the pelvis.

Dr. R. K. George has completed an investigation of a case of bipartite patella and has prepared a report on this condition. He has also compiled a summary of the 53 routine observations made annually on the cadavera. These exceed 4,000 items.

Dr. J. C. B. Grant has completed a report for the National Museum of Canada on the Beaver, Sekani and Carrier Indians; and has been engaged on the anthropological data he collected for the National Museum on the pure Cree Indians and mixed Cree-White breeds in central Alberta.

He has also investigated the conformation of the duct leading from the maxillary antrum.

Dr. B. L. Guyatt, in collaboration with H. D. Kay, D. Skill, H. E. Le-Masurier and W. V. Watson, continued a histological and chemical research on

beryllium rickets They find that subcutaneous injections of glycerophosphate administered to beryllium fed rats diminish definitely the extent of the rachitic bone lesion. Very little change in the organic phosphorous of the liver however accompanies this. The same collaborators have shown that when calcium is replaced by magnesium in a rachiticogenic diet, rachitic bone lesions occur; also that very large quantities of magnesium carbonate (3% of the diet) added to a normal diet produces a similar effect but of lesser degree.

In collaboration with Mr. E. M. Davidson he has investigated the use of transparent and opaque celluloid in the mounting of museum specimens; and, also the methods of colouring submerged tissues.

Dr. A. W. Ham continued his studies on bone and calcium metabolism by investigating the method by which pathological calcifications are produced following the administration of single massive doses of vitamin D. He found that the calcifications occurred as the serum calcium level was falling after having previously attained a high level, and has postulated that these calcifications are in the nature of precipitations caused by a shift in calcium from a bound state to one in which the serum was unable to retain it in solution

In conjunction with Dr. I. Schour of the University of Illinois he has carried on investigations into the manner of action of the parathyroid hormone. His results, together with the result of his previous work, indicate that vitamin D acts through the parathyroid mechanism and that the hormone controls a fraction of the serum calcium.

H. LeMasurier has been fully occupied in giving technical assistance to all members of the staff in their varied problems. He has in addition collaborated with Dr. Guyatt in studying the histology of beryllium rickets.

Dr. W. H. Piersol is studying early stages of gastrulation in the eggs of salamanders.

Dr. J. C. Watt, in collaboration with Dr. A. N. McKillop, made a study of the arrangement and distribution of the branches arising from the vertebral and basilar arteries. A preliminary report on this work was presented at the meeting of the Royal Society of Canada this year. And, in collaboration with Dr. Cates he has begun a study of a case of injury of the Biceps Brachii resulting in complete loss of its long head.

Astronomy, under direction of Professor C. A. Chant

The total solar eclipse visible in Quebec on August 31, 1932 was viewed from St. Alexis. Cloudy weather which prevailed almost generally throughout the eclipse track prevented our programme from being carried out satisfactorily. The apparatus which was prepared will be available for research on future occasions.

The major part of the time of the staff has been devoted to the working out of the details of the equipment of the David Dunlap Observatory. The mounting of the telescope has been completed and will soon be installed. The spectrograph which will be used in conjunction with the telescope for the determination of the radial velocities of the stars has been designed and is now being manufactured.

Medical Research, under direction of Dr. F. G. Banting

Dr. F. G. Banting and Miss S. Gairns continued the investigation of chickens immune to Rous sarcoma.

Dr. M. J. Thompson has continued the investigation of the thyroid glands of rats on diets containing varying ratios of calcium and iodine.

Dr. G. H. Ettinger of Queen's University, worked in this laboratory during the summer of 1932. He studied the effects of low voltage shocks on experimental animals.

Mr. G. E. Hall and Dr. Ettinger made a physiological study of pulmonary emboli produced in dogs.

Mr. H. J. Perkin elaborated a method for the determination of iodine in small amounts of blood. With Dr. H. R. Inksater, he applied the method to an investigation of iodine feeding in experimental animals, and to a study of the blood iodine content in thyroid patients.

Dr. D. A. Irwin continued the study of thorium dioxide in experimental animals. Dr. Irwin and Dr. W. H. Dickson (department of radiology) have investigated the possibility of dyes as an adjunct to the radiation therapy of neoplasms.

Dr. B. R. Brown has investigated the effect of denervation of lung in experimental animals.

Dr. W. R. Franks and Miss M. Shaw carried out experiments on the effect in tumour-bearing mice of the combination of radiation and lactate inoculation.

Dr. E. J. King and Miss M. Dolan made a study of the formation of lysolecithin under the action of snake venom on the lecithin of egg yolks. The enzymic hydrolysis of lysolecithin by the enzymes of intestinal mucosa and bone was studied and a comparison made of its behaviour on enzymic treatment with that of lecithin or kephalin.

Determinations of plasma phosphatase have been done by Miss Dolan for the Sick Children's Hospital on cases of rickets and craniotabes. Dr. King synthesised a sample of phenyl-phosphate and found it to be superior to glycerophosphate when used as a substrate for plasma phosphatase.

Dr. J. J. Rae has successfully used the enzymic method in separating pure alpha glycerophosphate from small amounts of the contaminating beta isomer, and has demonstrated the usefulness of phosphatase in settling the identity and the relative amounts of the isomers in mixtures of natural or artificial glycerophosphates. The results were presented in his thesis for the Ph.D. degree.

Mr. E. L. Outhouse completed his study of the phosphoric esters occurring in avian muscle and extended the investigation to malignant tissue. His results were embodied in a thesis for the degree of M.A.

Miss H. Tait has investigated the rate of oxidation of phosphatides, neutral fats and unsaturated fatty acids by the glutathione-orthocresol-indophenol system.

Dr. C. R. K. Johnston, in collaboration with Dr. King and Dr. Ham (department of anatomy) made a study of the effect of irradiated ergosterol on the calcium level in the cerebrospinal fluid and the fractions of calcium in serum.

During the summer of 1932 Mr. H. Hull investigated the effect of massive doses of Vitamin D in causing demineralisation of the skeleton and mobilisation of calcium in the serum.

Professor C. C. Lucas of Brandon College, worked in this laboratory during the summer of 1932, under the auspices of the James Page Rutherford Fellowship. He investigated the presence of a substance in urine giving the nitroprusside reaction. He succeeded in isolating this substance in a crystalline form.

The problem of silicosis, which has been under investigation in this department for the past six years, was greatly stimulated by a suggestion from Dr. D. Robson, of the McIntyre-Porcupine Mine. In addition to this, the Ontario Mining Association offered support and co-operation in a large scale investigation of many aspects of the problem.

Dr. G. C. Cameron and Miss J. Lang completed the investigation of the tissues of rabbits exposed to silica dust.

Dr. E. J. King has carried on experiments on the metabolism of silica. In collaboration with Dr. C. B. Ross of the Muskoka Hospital for Consumptives, a study was made of the presence of silica in the urine, sputum and blood of tuberculous patients who had a history of exposure to silica.

Dr. D. A. Irwin has studied the mode of entrance of silica particles into the lung and the changes produced in the tissue by the presence of these particles.

He has correlated the pulmonary lesions with the nodules produced by subcutaneous injections of silica particles. Dr. Irwin is working out a method for the differentiation of silicotic and tuberculous nodules by combining micro incineration and chemical extraction.

Dr. W. R. Franks conceived the idea of preventing silicosis by the cleaning of mine air by the application of the Cottrell process. With the assistance of the research laboratories of the Hydro Electric Commission of Ontario, he worked out the electrical requirements of a small portable mine unit, which is in the course of construction.

The department has had the continued interest and co-operation of Professor H. E. T. Haultain of the department of mining engineering, in the problem of silicosis.

Biochemistry, under direction of Professor H. Wasteneys

Research directed by Professors Wasteneys and Kay:

Mr. B. F. Crocker has continued and completed the research on which he was engaged last year on the growth function of the tonsils. He collaborated in this research with Dr. G. W. McGregor of the department of otolaryngology. They have shown by carefully controlled experiments that tonsillar extracts have no influence on the growth of white rats. The results of this research were embodied in a thesis presented by Mr. Crocker for the degree of M.A., and they will shortly be published.

Miss F. I. Hargreaves has continued, in collaboration with Dr. A. A. Fletcher and Dr. W. H. Dickson of the department of medicine, a study of colon conditions in rats on vitamin deficient diets. It has been found possible to obtain some measure of the extent of the effects of deficiency on the tone of the colon. The research is still in progress.

Mr. H. W. Lemon has investigated the enzymatic hydrolysis and synthesis of the ethereal sulphates. Using an aqueous extract of hog's kidney as a source of sulphatase and phenol potassium sulphate as substrate, he has determined the optimum hydrogen ion concentration for the action of the enzyme, and has determined that the alkaline earths, particularly calcium, exert an activating action. This research is still in progress.

Mr. G. H. McVicar has been studying the enzymatic synthesis of phosphoric esters, using phosphatase obtained from cat's intestinal mucosa. He has made satisfactory progress and is continuing the research.

Professor H. D. Kay has continued his investigation of the change in phosphoric ester content of the blood and liver in experimental rickets, and in collaboration with Dr. B. L. Guyatt of the department of anatomy he has concluded an investigation of beryllium rickets, which condition he has found can be satisfactorily cured either by returning the animals to a normal diet or by the administration of glycerophosphates.

Dr. J. H. Jukes has continued his investigation of the proteins of the yoke of avian eggs. He has also investigated the immunological behaviour of egg yolk proteins and has devised a method of general application for determining the amino acids in small quantities of protein material. Some of his results have already been published in the Journal of Biological Chemistry and the Journal of Experimental Medicine, and additional publications will shortly appear.

Mr. W. R. Graham has investigated the effect of thyroidectomy and thyroid feeding on milk fat formation and milk secretion in cows. The results of this investigation were embodied in a thesis for the degree of Ph.D. and will shortly be published. He has also investigated the phosphatase content of cow's milk.

Miss M. J. Lawson has been investigating the carbohydrate metabolism of excised rabbit's kidney and particularly the precursor or precursors of lactic acid. This research is still in progress.

Mr. V. Ignatieff has investigated the utilisation of organic phosphorus in corn, and has also investigated the optimum conditions of the activity of bean phosphatase.

Miss Leone Farrell carried out a research under the direction of Professor W. Lash Miller on the behaviour of yeasts in different culture media. Her results were submitted in the form of a thesis for the Ph.D. degree.

Researches directed by Professor A. M. Wynne:

Professor A. M. Wynne has completed investigations of the oxidation of low fatty acids in the acetone-butyl alcohol fermentation, results of which will shortly be published.

Mr. L. Farber has investigated the properties and behaviour of purified proteinase preparations obtained from pancreas and from taka-diastase. Studies of the kinetics have been made and the questions of enzyme-substrate compound formation and of the inhibitory effects of various substances and the phenomenon of spontaneous activation of glycerol solutions of the enzymes have been considered.

Mr. R. P. French has been engaged in studies of the fat metabolism of yeast. Attention has been directed chiefly toward the adaptation of recent macro and micro methods of fat analysis to microorganisms. A study of the effects of various factors on yeast fat formation has been begun and studies of the lipase systems of certain microorganisms are in progress.

Mr. E. C. Penney investigated the formation of volatile fatty acids by propionic acid bacteria growing in twenty different culture media containing various carbohydrates and related compounds. Previous studies of the influence of inorganic salts on the metabolism of Clostridium acetobutylicum were continued.

Mr. L. B. Pett has continued his investigation of bacterial phosphatases, including studies of the effect of cations and anions on the rate of hydrolysis of different substrates. The activation by magnesium was particularly studied and specificity of the enzymes themselves was investigated. He has also studied kinetics of bacterial phosphatase action and the effects of arsenite and arsenate ions, not only on bacterial but also on yeast and mammalian phosphatases. Incidentally he has worked out a method for the determination of inorganic phosphate in the presence of arsenic. The intermediary metabolism of a typical propionic acid forming bacterium was investigated and evidence was obtained for the formation of methylglyoxal from hexosediphosphate and glycerophosphate as well as that of another three carbon compound, either dihydroxyacetone or glyceraldehyde, from glycerophosphate. The results of these researches are in course of publication.

Mr. S. Weinstein has studied the purification and behaviour of pancreatic lipase. Investigations of the kinetics of the enzyme have been made; a systematic study of the effects of activators and inhibitors is in progress.

Biology, under direction of Professor B. A. Bensley

The following summary includes investigations in progress, published or in course of publication for the year 1932-33.

Vertebrate Zoology: B. A. Bensley, supervision of C. R. Gadaire, studies on relation of enamel organ to crown pattern in mammalian teeth.

Invertebrate Zoology, Entomology: E. M. Walker, studies on the head capsule of orthopteroid insects, nymphs of Canadian Odonata, revision of Canadian species of *Ophiogomphus*, *Odonata* of Lake Nipissing, Manitoba, and Maritimes. Supervision of C. E. Atwood, studies on the bee genera *Andrena* and *Halictis;* A. D. Baker, morphology of the coecal worm of fowls; Miss A. Chorolsky, growth stages of the primitive orthopterid insect, *Grylloblatta;* Miss J. Fraser, studies on Ontario *Trichoptera;* F. P. Ide, temperature factors in distribution of may-flies, life histories of may-flies inhabiting trout streams; Miss E. M. Lyons, cestode parasites of fresh water fishes; L. F. McGee, life histories and oecology of midges in Ontario waters.

Histology: W. H. Piersol, supervision of Miss M. A. Langstroth, studies on histogenesis of fish muscle.

Marine Biology: A. G. Huntsman, factors determining local concentration of herring populations on the Atlantic coast of Canada. Supervision of A. A. Blair, differential life histories of Atlantic salmon; G. C. Carl, preliminary studies of changes from saline to fresh water environment; Miss V. Davidson, fluctuations in abundance of diatoms in the Passamoquoddy region; C. L. Newcombe, growth studies of Mya arenaria; M. W. Smith, fertilisation of water; W. Templeman, variation in life history of Atlantic lobster.

Vertebrate Embryology: A. F. Coventry, studies in mammalian placentation, small mammal populations in Timagami region, effects of temperature and crowding in early development of Amphibia. Supervision of F. E. J. Fry for studies of temperature factor in development of cisco.

Ichthyology, Conservation: J. R. Dymond, fishes of Lake Nipissing; distribution of salmonoid fishes in northern North America. Supervision of C. H. D. Clarke, numerical fluctuation in ruffed grouse; F. E. J. Fry, biometric studies of *Leucichthys* in Lake Nipissing; D. A. MacLulich, changes in abundance of varying hares; C. McC. Mottley, biometric and other studies on Kamloops trout; W. R. Whittaker, life history of Pacific pilchard.

Mammalian Anatomy: W. H. T. Baillie, intermediate stages in development of the oblique muscle of the eye; position and relations of ciliary muscle. Supervision of D. L. Adamson, studies on the capillary supply of the duodenum.

Genetics: J. W. MacArthur, distribution of genes among isometric chromosomes, inherited characters in tomato, sex-linked genes in domestic fowl, production of artificial mutants in tomato, genetics of down colours in fowl, hybrid vigour in fowl, *Drosophila* and maize, species crosses in columbines. Supervision of L. Butler, genetics of cucumber; F. Jerome, studies in hybrid vigour; G. Raithby, analysis of breeding lines in cattle; J. B. Smith, variability in chick embryos; E. S. Snyder, selection of high and low breeding lines in poultry. In conjunction with W. H. T. Baillie, sex differences in mortality in *Abraxas* type species.

Comparative Neurology: E. H. Craigie, vascularity of parts of the cerebellum, brain stem and spinal cord in albino rat, studies of technical methods applicable to preservation of neurological material. Supervision of G. C. Smith, volume changes accompanying growth in albino rat.

Limnobiology: W. J. Harkness, direction of field investigation of Lake Nipissing; studies on the life history of the sturgeon Supervision of D. Chitty, relation of aquatic plants to fish life; J. M. Corkill, physico-chemical investigation of Lake Nipissing (in conjunction with G. H. W. Lucas); F. E. J. Fry, studies on the ciscoes (in conjunction with J. R. Dymond); R. Langford, qualitative and quantitative studies of plankton; J. P. Oughton, bottom fauna of Lake Nipissing; E. Skelton, rate of growth in fishes; Mrs. E. G. Skelton, food studies of Lake Nipissing fishes.

During the year thirty-four resident and many other non-resident graduate students were engaged in investigation under supervision of members of the staff. Several qualified for higher degrees, including 1 M.A., 1 M.S.A., and 6 Ph.D.

Botany, under direction of Professor R. B. Thomson

Phanerogamic Botany, Genetics and Plant Breeding

Anatomy and Experimental Morphology

Baldwin, W. K. W.—The organisation of the young sporophyte of *Isoëtes*, *Ophioglossum* and *Botrychium*.

Bannan, M. W.—The origin and character of xylem rays in the gymnosperms. A Ph.D. thesis. (Ready for publication).

Seasonal wounding and resin cyst production in the hemlock *Tsuga canadensis* (L.) Carr. (Ready for publication).

Vigour of growth and traumatic resin cyst development in the hemlock *Tsuga canadensis* (L.) Carr. (Ready for publication).

Factors influencing the distribution of vertical resin canals in the wood of the larch *Larix laricina* (Du Roi) Koch. (Ready for publication).

The distribution and relationship of albuminous cells in phloem rays of the gymnosperms. (Ready for publication).

A study of resin canals in the conifers: (*a*) ontogeny, (*b*) phylogeny.

Hull, K. L., and Thomson, R. B.—The structure of *Lycopodium* and *Selaginella*.

LaRush, Mrs. F.—Studies on pollen grains in connection with hay fever.

Roscoe, Mary K.—Study of vessels in the Birch.

Taylor, T. M. C.—The sporeling organisation and the cladorhize development of the adult plant in *Equisetum arvense* L.

Thomson, R. B.—A Seed-plant Feature of the Root in Marattiaceae. (Accepted for publication in the New Phytologist).

Heterothally and the Seed Habit *versus* Heterospory. (Accepted for publication in the New Phytologist).

The organisation of the lower vascular plants.

Thomson, R. B., and Bannan, M. W.—The stimulation of resin production by chemical means.

Wright, J. Gertrude—The nature of the pit-closing membrane in the higher gymnosperms.

Taxonomy

Krotkov, P.—Collection in Ontario; revision of the herbarium material; special study of Ontario willows and golden rods.

Taylor, T. M. C.—The moss flora of Ontario and the distribution of Ontario ferns.

Genetics

Clark, F. R.—Studies on Regeneration.

Lewis, R. M.—The genetics of awned hoods in barley.

Thomson, R. B.—Study of an abnormal type of *Linaria vulgaris*.

Mycology, Forest Pathology and Cryptogamic Botany
(Under the direction of Professor H. S. Jackson)

Astrom, Miss I. E.—A cytological study of *Erysiphe aggregata*.

Bier, J. E.—A study of Hypoxylon canker and other canker producing fungi attacking *Populus*.

Cain, R. F.—A taxonomic study of Ontario Sordariaceae and related Sphaeriales. (Ready for publication).

Dearness, John.—With the co-operation of the Department of Botany, Dr. John Dearness of London, Ontario, is preparing an annotated list of the fungi known to occur in Ontario.

Groves, J. W.—Cultural studies of certain canker forming species of *Dermatea Pezicula*, *Godronia* and related forms.

Jackson, H. S.—(1) Study of the rusts of South America based on the Holway collections. This is a taxonomic study dealing with a large collection of rusts made by the late Professor E. W. D. Holway, of the University of Minnesota, in South America. Publication is in the form of a series of papers in Mycologia. Six numbers have already been printed, and a supplementary number is in preparation. (See Mycologia *18*: 141-162; *19*: 51-65, 1927; *23*: 96-116, 332-364, 463-503, 1931; *24*: 62-186, 1932). (2) A study of the rusts of Panama and Costa Rica. (3) The mycological flora of the Toronto region and of the Temagami Forest Reserve. (4) A

cytological study of *Herpobasidium filicinum*. (5) The Ustilaginales of Venezuela.

Lehmann, A. J. V.—A study of the nuclear phenomena of the germination of the teliospores of certain species of *Lepto-Puccinia*.

Nobles, Miss M. K.—A cultural study of certain resupinate Hydnaceae.

Pady, S. M.—A study of the development of the teliospores of certain forest tree rusts and the cytology of the germinating teliospores in *Hyalospora aspidiotus*. (Ready for publication). This project was conducted in co-operation with the Forestry Branch of the Provincial Department of Lands and Forests.

Plant Ecology and Seed Studies

(Under the direction of Professor H. B. Sifton)

Structural Ecology

Cormack, R. G. H.—A microchemical and experimental investigation of the development of root hairs.

Cushnie, C. J.—An investigation of the causes and development of air spaces in the Indian Corn plant.

McPherson, D. C.—On the structure, form, and development of *Sagittaria sagittifolia*.

Sifton, H. B.—On the development of the leaves of Labrador Tea.

Seed Studies

Hamly, D. H.—Further investigations on the seed coats of Legumes.

Leggatt, C. W.—(1) Investigation of dormancy in Wild Oats.
(2) Investigation of certain mathematical aspects of seed analysis.

McGugan, Miss J. E.—(1) The Seed-coats of the genus *Brassica*.
(2) The occurrence of certain characteristic pigments in the cotyledons of *Brassica* species and varieties,—and their value in seed identification.

Sifton, H. B.—Investigation of the effect of alternating temperatures on seed germination.

Plant Physiology

(Under the direction of Professor G. H. Duff)

Duff, G. H., & Forward, D. F.—The Respiratory Metabolism of Wheat. This work has now been extended to: (1) An analysis of the respiratory activity of the leaf *in situ* and its relation to the changing concentration of sugar in the leaf cells. (2) An experimental investigation of the causes of certain distortions in the respiration rate time curves which indicates that these distortions have their origin in fluctuations of stomatal aperture which alter the resistance in the path of free diffusion of the measured CO_2 and lead to changes in the composition of the internal atmosphere of the leaf.

Forward, Miss D. F.—The parasitism of the wheat stem rust fungus in relation to the metabolic physiology of the host. Two further communications will shortly be ready for the press. In these it is shown that: (1) The infection type can be modified in an extended range of host-parasite combinations, in a manner similar to that reported in the first paper for rust form XXI alone. (2) The experimental treatment induces modification of the infection type through primary effects upon host metabolism rather than primary effects upon the parasite.

Krotkov, G.—The carbohydrate Metabolism of the Wheat Leaf. The respiration-sugar relation in the isolated leaf has been examined

throughout a prolonged interval of starvation. The contribution of non-sugar materials to the CO_2 output of the tissues has been determined and its increase with duration of starvation defined.

Plant Pathology

(Under the direction of Professor D. L. Bailey)

Bailey, D. L.—(1) Dead Arm Disease of Grape.
(2) Cytospora disease of Blue Spruce. Co-operative projects with the Horticultural Experiment Station at Vineland.

Fitzpatrick, R. E.—Peach Leaf Curl. The results of an investigation on the life history and parasitism of *Taphrina deformans*, the causal organism of peach leaf curl have been presented in a Ph.D. thesis. (Ready for publication).

Truscott, J. H. L.—Phycomycetous parasites of the roots of cultivated plants. This investigation was carried on with the aid of a National Research Council Studentship, main attention being centred upon strawberries. A number of hitherto undescribed parasites have been isolated and their pathogenicity studied under greenhouse conditions.

Hildebrand, A. A.—Root Rots of Ginseng. A co-operative project between the Department of Botany and the Dominion Plant Pathological Laboratory at St. Catharines. The results of three years' study of two root diseases of Ginseng were presented in a Ph.D. thesis. It is expected that publication will soon be made.

Hagborg, W. A. F.—The so-called Black Chaff disease of wheat has been investigated. This is a bacterial disease of great possible significance in as much as many of the promising new rust resistant hybrids of Western Canada seem highly susceptible.

Chemistry, under direction of Professor W. Lash Miller

Thirty-six students were engaged in research last winter under the direction of professors of the department of chemistry. The degree of Master of Arts was conferred on ten of these, viz.: Miss M. L. Elder, Miss M. McQuhae, and Messrs. G. W. Alles, M. Freed, O. H. Howden, L. J. Hynes, A. C. Morris, W. O. Reevely, E. E. Wood and J. B. Young; also on Mr. E. L. Outhouse, who worked under Professor E. J. King. The degree of Master of Science in Agriculture was conferred on Messrs. V. A. A. Archer and J. J. Lehayne, whose research was carried out in Guelph under Professor R. Harcourt. The degree of Doctor of Philosophy was conferred on Mr. H. W. Lohse, who came here to finish work begun in Guelph; on Mr. A. M. Mueller who worked under the direction of Professor W. Lash Miller; on Mr. J. R. Musgrave whose research was directed by Professor J. B. Ferguson; and on Mr. J. J. Rae, who worked in the Banting Institute under Professor E. J. King.

The following were the subjects of research:—

G. W. Alles, B.A.—The reaction of aluminium chloride with organic esters.

Miss H. J. Bell, B.A.—The removal of bases from living yeast by acids.

F. E. Beamish, M.A.—Determination of organic halogens by means of a micro bomb.

F. Bremner, B.A.Sc.—Homologues of diphenyl sulphone.

C. Caesar.—Quantitative separation of arsenic from iron by sodium polysulphide.

D. S. Calder, M.A.—The photochemical reaction of trans to cis ditoluylethylene.

J. J. Chechack—Synthesis of quaternary ammonium bases.

A. F. W. Cole, M.A. } Determination of the diffusion constant of copper
J. A. Dick, B.A. } sulphate in sulphuric acid solutions.
G. Duncan, B.A.Sc.—The passivity of iron.
Miss E. V. Eastcott, Ph.D.—Purification of Bios IIA.
Miss L. Elder, B.A.—Sporulation of yeast.
Miss L. Farrell, M.A.—A fourth constituent of Bios.
M. Freed, M.A.—Critical solution phenomena.
A. R. Gordon, Ph.D.—Computation of thermodynamic quantities from spectroscopic data.
D. L. Griffith—Accurate determination of vapour tensions by the gas-flow method.
O. H. Howden, B.A.—The Raman effect in concentrated solutions of electrolytes.
H. B. Howe—Electrode potentials in the reduction of nitrobenzene.
L. J. Hynes, B.A.—Gaseous conduction in carbon arcs.
G. M. Kavanagh—Study of a beam microbalance.
F. H. Lawford—Partial pressures of alcohol-heptane solutions.
H. W. Lohse, M.S.A.—Availability of potash in soils and minerals.
F. R. Lorriman, Ph.D.—Ring colsure in aromatic keto-acids.
W. H. Martin, Ph.D.—The continuous spectrum in the light scattered by glycerine.
Miss M. McQuhae, B.A.—The separation of solids of different densities.
A. C. Medcalf, M.A.—Reactions of benzoyl chloride with aromatic hydrocarbons.
G. E. Moore, M.A.—Electrical conductivity of powders.
J. C. Morgan, M.A.—Overvoltage during electrolysis of silver sulphate solutions.
A. C. Morris, B.A.—Partial pressures of alcohol-methanol solutions.
J. R. Musgrave, M.A.—Base exchanging properties of synthetic aluminosilicates.
W. O. Reevely, B.A.—Determination of transport numbers by the moving-boundary method.
R. G. Romans—The taste of salt solutions.
Miss B. M. Shannon, B.H.Sc.—Abnormal forms of yeast produced by chemical means.
H. A. Showalter, M.A.—Solubility of carbon dioxide in aqueous alcohol.
Miss H. Stantial, Ph.D.—Qualitative analysis of mixtures of amino-acids.
H. R. Timpson, B.A.—Double boiling-points.
E. E. Wood, B.A.—The decomposition of ferrous oxide.
T. J. Wright, M.A.—Calorimetric studies.
J. V. Young, B.A.—Alkaline reduction of meso-nitroanthracene.

Food Chemistry, under direction of Professor C. C. Benson

During this session, there have been six students registered in this department from the School of Graduate Studies. Three of these are candidates for the degree of M.A. from this department, while the others have been taking undergraduate work in preparation for special study in another department.

Two of the graduate students are engaged on fundamental problems in connection with the study of foams and emulsions, and the third, Mrs. Jean Cranston Mottley, is carrying on work in connection with the food of fish, working at present at the Biological Station at Nanaimo, B.C., under the direct supervision of Dr. Clemens, the Director of the Station, and Dr. Carter, both of whom are reporting to me. Mrs. Mottley was in attendance during the session of 1932-1933 and will, probably, complete her work at Nanaimo.

Geology, under direction of Professor W. A. Parks

Professor A. P. Coleman (professor emeritus) was engaged during the year as follows:

(*a*) Mapping the Pleistocene deposits, particularly the Iroquois shore between Toronto and Belleville.

(*b*) Preparing report and maps on the above work.

Professor Parks and Professor Moore spent the summer of 1932 in rearranging the collections in the new museum. Professor MacLean acted as field assistant to Professor Coleman.

During the winter the following work was carried on in the laboratories:

By Professor W. A. Parks

(*a*) Examination of turtles and dinosaurus from Alberta and preparation of a report thereon.

(*b*) Examination and description of several new species of Champsosaurus from the Cretaceous formation of Alberta.

(*c*) Microscopic examination of a large number of Devonian stromatoporoids.

Under direction of Professor W. A. Parks

(*a*) J. F. Caley—Completion of the study of the Upper Ordovician of Manitoulin Island.

(*b*) H. G. Way—Completion of the study of the Silurian of Manitoulin Island.

(*c*) J. P. Nowlan—Study of the Silurian formations of the Niagara cuesta.

By Professor E. S. Moore

(*a*) Genetic relations of silver and diabase in Ontario.

Under direction of Professor E. S. Moore

(*a*) G. H. Charlewood—The nature and distribution of carbonates in veins.

(*b*) J. D. Wright—The age relations of certain granites and related arsenical gold deposits near the north shore of Lake Huron.

(*c*) G. S. MacKenzie—The origin of the lead-zinc deposits in the Grenville sub-province of Ontario and Quebec.

(*d*) W. R. Nemerovsky—A study of the microscopic characters of the Phelan coal seam.

(*e*) M. F. Teskey—Base exchange and its rôle in the origin of coal.

(*f*) W. S. Savage—The origin of manganese deposits.

By Dr. D. R. Derry

(*a*) Investigation of the heavy minerals of the Ordovician of Ontario and of the Pleistocene beds at Toronto.

(*b*) Microscopic study of the problem of the "école porphyry" of Porcupine, Ont.

Under the direction of Dr. D. R. Derry

(*a*) A. Holstein—Preliminary work on the examination of Silurian and Ordovician strata from the point of view of sedimentation.

By J. C. Sproule

(*a*) Field work and laboratory studies on the Middle Ordovician strata of Ontario.

Household Science, under direction of Professor A. L. Laird

During the session 1932-33 there have been five students working on graduate problems under the joint direction of Professors Laird, Willard, and Valentine. Two of these students were granted the degree of Master of Arts.

Miss L. M. Burrill, a graduate of the University of Minnesota, has made a very careful study as to the relation of the time of cooking on the digestion of

certain cereals. This problem has been carried on with the cooperation of the department of paediatrics, Sick Children's Hospital, and while much more can and should be done on this subject, Miss Burrill's contribution is of definite practical value.

Miss M. A. Lind has also worked on a problem of practical value. She has made a study of the effect of certain factors such as,—alkalis, soap solutions, temperature, on the shrinking and tensile strength of woollens of different weaves during the process of laundering.

Applied Mathematics, under direction of Professor J. L. Synge

The following researches have been in progress during 1932-33:

H. M. Chisholm, M.Sc.:—The theory of the lubrication of the journal bearing of finite length.

B. A. Griffith, M.A.:—Higher approximations to the steady flow of a viscous liquid past a fixed sphere.

A. F. Stevenson, Ph.D.:—The theory of the flow of current in heterogeneous media.

J. L. Synge, Sc.D.:—Riemannian spaces with transverse isotropy. The stability of fluid motions.

Medicine, under direction of Dr. Duncan Graham

During the past year members of the staff have been most active in the investigation of different clinical problems. Reference will be made to a few of the problems studied.

For the past few years Dr. Farquharson has been applying Bauer's galactose liver function test in cases of liver and biliary tract disease. In the past year Dr. G. A. Grant, using his own method for the estimation of blood galactose, has estimated the blood galactose curves on the cases of liver and biliary tract disease investigated in the Clinic. The comparative value of these two tests has now been determined.

Dr. Hyland and Dr. Farquharson are making a careful clinical and pathological study of the neurological changes in Addison's (pernicious) anaemia.

Dr. Rykert is continuing our electrocardiographic observations on patients with diabetes mellitus and carefully observing the peripheral arteries in diabetic patients under treatment. He has made some interesting electrocardiographic observations in cases of hypertension which will be published shortly.

Dr. Campbell and Dr. Fletcher are continuing their investigation of the effects of different diets in the treatment of patients with diabetes mellitus.

Dr. Wrong has been studying the pathological changes occurring in the skin in certain types of skin disease.

Dr. Warner is continuing his work on the production of bronchiectasis in animals.

A complete report of Dr. Malthy's studies on the digestion of beef protein in the human stomach will be published shortly. This report records some important observations on the digestion of protein in normal individuals with achlorhydria and in patients suffering from Addison's (pernicious) anaemia.

Research in Mineralogy, under direction of Professor T. L. Walker

The transfer of the Royal Ontario Museum to its new quarters and the arrangement of the material has made serious demands on the time of the senior members of the staff. As a result the time available for research has been somewhat limited. The following investigations have been carried to completion:

Mr. W. L. Brown has continued his study of the photo-phosphorescence of minerals.

Mr. A. S. Dadson has studied some Canadian apatite crystals with a view to determining the relation between crystal habit and chemical composition.

Mr. V. B. Meen, chemical analyses of plagioclase accompanied by optical and physical determination of each.

Professor A. L. Parsons has made a detailed study of the large diamond recently presented to the Royal Ontario Museum of Mineralogy.

Professor Ellis Thomson continued his mineralographic studies of the minerals in the ores of the Miller Lake—O'Brien Mine, Gowganda, and in the silver-pitchblende ores from Great Bear Lake.

Professor T. L. Walker has made a laboratory study of the suite of rocks collected in the vicinity of Port Coldwell, Ontario, in 1925 and an optical examination of the rare mineral tungstite.

The chemical data necessary for some of the above investigations were obtained by Mr. E. M. Quinlan, research assistant in this department.

Obstetrics and Gynaecology, under direction of Dr. W. B. Hendry

In co-operation with the department of anatomy the anthropological study commenced three years ago by Dr. Goodwin is being carried on and a great deal of valuable material has been accumulated which will shortly be published. In recognition of the work done in this connection Dr. Goodwin has been elected a Fellow of the Royal Anthropological Institute.

In co-operation with the departments of genito-urinary surgery and radiology Dr. Henderson has been investigating the ureteral changes which take place during pregnancy. Further study of these changes is necessary and is still being made with the expectation that during the next year it will be possible to appraise the results of this investigation.

In co-operation with the department of radiology Dr. Cosbie has been studying the significance of thorotrast as an aid to diagnosis in obstetrical practice.

Dr. Henderson has been carrying out an investigation into the effect of Kolene on the progress of labour, the results of which investigation will be published shortly.

Further work in the department is being done in connection with an investigation into the anaemias of pregnancy, and concerning the effect of vitamines on pregnant women.

Dr. Mann has made, during the past year, some advances towards the perfection of a new obstetrical forceps.

Ophthalmology, under direction of Dr. W. H. Lowry

Dr. Macrae has been doing some work in the Banting Institute which is proving of interest. It was found that rats on a low iodine diet for a period of three or more months developed exophthalmos along with typical goiterous thyroid glands. The measurement of this exophthalmos was then attempted along with the examination of the orbital contents for possible histological changes. Experiments are being continued and we hope to report on the work done shortly. Dr. Macrae is also making detailed study of ophthalmological findings in series of brain tumour cases admitted to the department of neurological surgery at the General Hospital.

During the year research work has been carried out with a view to producing a stronger electro-magnet for ocular work. Dr. A. E. MacDonald is trying to cut down the size of the magnet without sacrificing the force required to extract an intraocular steel-foreign body. He hopes that funds will be made available so that this work may be carried out to a satisfactory completion. He thinks that a grant of $50.00 would be sufficient for this purpose.

At the present time thanks to a small grant through Dr. Banting's department, Dr. MacDonald, with Dr. D. A. Irwin, is carrying on some investigations

on intraocular injection of thorium-dioxide. The eye tolerates this material very well and their early results seem to indicate a new lymphatic flow from the region of the canal of Schlemm to the suprachoroidal space, passing through the outer part of the ciliary body.

Paediatrics, under direction of Dr. A. Brown

During the past year material progress has been made in many of the problems under investigation in this department. Probably one of the most important of these has been the results obtained in the study of the production and prevention of dental caries (decay). This work has been conducted by this department with the co-operation of members of the dental profession. Dental caries has been produced and prevented at will in animals, and by increasing the phosphorus and vitamin D in the diet of children the occurrence of this condition has been definitely reduced.

The prevention of dental caries by dietary means is of very great interest not only to the dental profession, but also to the medical profession, because many of the ills to which the human race is heir have their origin in faulty teeth. While the problem of dental decay is far from being solved, still it is felt that the information obtained constitutes a distinct advance, and should be of definite practical value in improving the diets of not only children but also adults.

A number of interesting and practical investigations on the value of some of the common articles of diet have been undertaken. The importance of various elements in the diet for the development of optimal growth and resistance against infection has been investigated. Studies are being made of a number of the diseases encountered in the Hospital for Sick Children in an attempt to discover not only better means of treatment, but means for the prevention of those conditions.

Pathology and Bacteriology, under direction of Professor Oskar Klotz

The department of pathology and bacteriology has maintained its activities in research during the past session, and although the output of published papers is somewhat less than the preceding year, the actual time given to work on some fundamental problems has been greater. Some of the members of the department are engaged upon studies, whose results will not be available for a year or two more. These we hope will justify the energy expended upon them. In carrying on these researches every effort has been made to curtail expenses, where a saving could be made without seriously affecting the work upon the problem. By this means we have reduced our working expenses, a saving having been made particularly upon apparatus.

Professor Oskar Klotz, whose researches in the past have been particularly identified with diseases of the arteries, has again given his attention to lesions of the circulatory apparatus. He has also stimulated an interest on similar phases of work, among members of the staff and the fellows. It is hoped that the next few years will be productive of advances on these subjects. In recognition of the work which Professor Klotz has done on arteriosclerosis, he has been invited to represent Canada and the United States upon the programme of the International Society of Pathologists to be held at Utrecht next year. At this meeting the subject of arteriosclerosis is to be presented from all aspects; Professor Klotz will discuss our present knowledge concerning its etiology and reproduction in animal experiments. Dr. Helen L. Vanderveer is continuing her studies upon the influence of diabetes on the arterial system, with particular reference to the development of arteriosclerosis in the vessels of the extremities. These experiments require much time for their completion, for the lesions do not appear rapidly, and months pass by before any material results accrue. Dr. J. R. E. Morgan has also been studying arterial lesions, with particular attention to the pathological changes arising in Buerger's Disease.

Professor W. L. Robinson, whose interest a few years ago was centred upon the anatomy and function of the spleen, is again picking up the threads of this work. For a time it appeared as if an impassability had been reached, and that further advances could be made only with the development of a new technique. Some of these technical difficulties are being conquered, and new work is in progress.

Professor W. L. Holman is continuing his work on the streptococcus, and with the assistance of Miss A. E. Carson is investigating the claims of Dr. Alice C. Evans, concerning the metamorphosis of streptococci with spore-bearing rods.

Dr. T. H. Belt continues to concentrate his studies upon pulmonary lesions. Fibroses of lung are being better understood in their relation to certain causative factors. These lesions in consequence to incomplete resolution of lung following pneumonia, and particularly influenzal pneumonia, are not uncommon and bring about a certain amount of impairment of function. Extensive fibroses associated with silicosis, diffuse carcinomatosis, interstitial pneumonia and fibrosing pneumonia have been carefully analysed and the pathogenesis determined. Dr. Belt has also investigated the nature and manner of development of pulmonary embolism and thrombosis. This is a most important practical problem and one which must interest both physician and surgeon as well as the pathologist. Nor is the problem as simple as has in the past been suggested. The important question to answer is why do bland thromboses arise, and what is their exact nature?

Dr. P. H. Greey investigated the occurrence of yeast infection of the blood stream and heart. Subsequently he and his assistants carried out some intensive studies upon actinomyces infection in man. This has necessitated the development of special technique, which since mastered has given rise to some most interesting results. This study will be continued during the coming year.

Continued advances are being made in the investigation of bovine tuberculosis in man. This work is in the hands of Dr. R. Margarite Price, who has achieved some notable results in her studies. This work is done in co-operation with investigators at other universities under the auspices of the National Research Council. Since this work was begun in 1926, Canada has made her first serious scientific contribution in the field of tuberculosis.

Other investigations carried on and completed have been made by Dr. Eric Massig on Brown Induration of Lung, and on Congenital Aneurysm of the Interventricular Septum; Dr. L. W. Plewes on the Nature and Origin of the Xanthomatous Tissues; Dr. C. R. Rapp on the Influence of Injection Fluids on Thrombosis; Dr. J. L. Blaisdell on Extramedullary Blood Formation in Retroperitoneal Tumour, Cancer of Lung, and the Renal Lesions of Rheumatic Fever; Dr. J. R. E. Morgan on Gonococcal Tenosinositis; Dr. L. L. Wyse on Perforation of Gall-Bladder.

In the Division of Neuropathology the interest of the department has been largely centered upon the study of differentiation of tumours of brain and cord. An excellent amount of material is available both from the surgical divisions and the autopsy clinic, allowing the Division to have the opportunity of a comparative study of varieties of tumour from this region. As the differentiation of these tumours rests upon microscopic characteristics it is necessary to have available the most advanced of the delicate technique in microhistology. Very satisfactory results have been obtained by the division through these intensive studies, and the results made available to the clinical departments. Investigations are also underway by Dr. Linell and his staff on degenerative processes of brain and cord, which are encountered in the Medical Wards. Excellent co-operation has been developed between the division and the departments of medicine and surgery. In conjunction with Dr. J. A. MacFarlane, Dr. Linell is reporting upon Benign Giant-Cell Tumour of the Third Cervical Vertebrae; and with Dr. A. W. Farmer upon the Neurocytoma of Pelvic Sympathetic Trunk.

Pathological Chemistry, under direction of Dr. V. J. Harding

The association of this department with urology in the use of urea clearance test in some surgical cases, has been continued. The results show the practical value of this test. Dr. R. W. I. Urquhart has spent a considerable amount of time over this piece of work.

The help of the department of medicine has enabled Dr. G. A. Grant to continue his work on galactose metabolism. In association with Dr. D. Glaister he has been able definitely to trace the appearance and disappearance of this sugar in muscle after its oral administration. The tolerance of the rat to galactose is much less than in man. In a study of hepatic disorders, the value of the new differential method of blood sugar analysis has been shown superior to the old method of total sugar determinations in galactose tolerance tests. Dr. Grant's work has been acknowledged by the Royal Society of Canada, who granted him a fellowship for its continuation next year. Dr. Grant will study at the Lister Institute of Preventive Medicine, London, England.

Dr. D. L. Selby's work on benign glycosurias has been continued. The existence of a glycosuria during some portion of the day has been demonstrated in fifty per cent of normal individuals. The existence of minute traces of sugar in urine during the fasting condition is, however, still open to doubt. This work is being continued.

Dr. A. R. Armstrong has been associated with Dr. Selby in some of the above work, but, independently, has contributed new knowledge on the behaviour of sugars other than in blood. It is too early to state the practical importance or otherwise, of this work.

Professor T. F. Nicholson has continued his work on the use of biological reagents in sugar analysis. Methods for the use of yeast, briefly noted in last year's report, have been refined and made more adaptable to practical laboratory conditions. These new methods are being applied, with the assistance of other members of the staff to the study of various sugar problems. Mr. R. Archibald and Mr. S. Jackson have been assisting.

Pharmacology, under direction of Dr. V. E. Henderson

Research during the year has made satisfactory progress. With Dr. Roepke, I have continued the study of the mechanism by which stimulation of a parasympathetic nerve leads to the activity of gland and muscle cells. We have shown clearly that stimulation of the chorda tympani leads to a production of acetyl choline, whether atropine prevents the external secretion or not, and that the vasodilation produced may be entirely due to the acetyl choline liberated. Stimulation of the nerves to the urinary bladder also leads to the local production of acetyl choline. A further study of the mechanism of vasodilation is in progress. These studies, with others being reported from laboratories throughout the world, must lead to a profound change in pharmacological and physiological thought. These studies have led to the preparation of two papers, and a third is in progress.

Dr. Roepke has also begun a study of the oxidation reduction potentials of several of the rarer sugars.

Mr. Welch has made real progress with his study of the oxidation of adrenaline, and has a paper almost ready for publication.

Dr. Lucas has made a very detailed study of the movements of cilia and the effects of anaesthetics upon them. This study, now approaching completion, places our knowledge on a firm basis and may prove of considerable practical value.

Dr. W. E. Brown and Dr. J. G. Perkin, working as volunteers in this department, have completed a study of the toxicity of nitrous oxide which is also of considerable theoretic as well as practical interest.

Physics, under direction of Professor E. F. Burton

During the session 1932-33 there were eighty-six graduate students in attendance in the department of physics. Of these, thirty-five were engaged in experimental research work, and the remainder were taking various courses of lectures. Thirty-three students were enrolled in various courses in physics as part of their work for the Ph.D. degree, and forty-one in courses leading to the M.A. and M.A.Sc. degrees. In physics four students were granted the degree of Doctor of Philosophy, and ten the degree of Master of Arts.

Special lectures in advanced physics were given during the term by Professor Otto Hahn, of Dahlen, Berlin, Germany, and Professor G. F. Hull, of Dartmouth College, Hanover, N.H.

A list of the researches carried out or directed by the different members of the staff in Physics is given in detail below.

A. Researches under the direction of Professor E. F. Burton, in collaboration with—

Professor A. B. McLay and Mr. M. F. Crawford

On the extension of the multiplet and hyperfine structure analyses of Bi II and Bi III.

The electrodeless discharge spectrum of bismuth has been remeasured in the region λ 10,000 Å to 800 Å, and the excitation characteristic of the lines determined. The data has been used to extend our previous analyses of Bi II and Bi III. New terms of the one-electron and the three-electron configurations of Bi III, and of the two-electron and four-electron configurations of Bi II have been identified. The hyperfine structure intervals of a number of terms of both spectra have been determined. The results are discussed and compared with theory.

Professor A. B. McLay and Mr. M. F. Crawford

The multiplet and hyperfine structure analyses of Bi IV.

About one hundred and fifty lines in the electrodeless discharge spectrum of bismuth have been classified as transitions in Bi IV. The majority of the identified terms arise from the ordinary two-electron configurations, a few belong to the $5d^9\,6s^2\,6p$ configuration. The multiplet structures correspond to intermediate coupling, and resemble in many respects the structures of the preceding members of the isoelectronic sequence. Many of the transitions show wide hyperfine structures. These have been interpreted and the hyperfine intervals of a number of terms determined. The multiplet and the hyperfine structures are compared with theory. The comparison shows two interesting cases of perturbation, one in multiplet structure and one in hyperfine structure.

Mr. J. F. Allen

The supraconductivity of alloy systems.

Seven complete alloy systems were examined for supraconductivity and general deductions were made regarding the characteristics of supraconductivity in different types of alloy phases. It was found that the supraconducting point maintained a steady value throughout eutectic regions except in the neighbourhood of the phase boundaries, and that the supraconducting point varied continuously in phases composed of solid solutions. The alloy systems examined were: Au-Sn, Au-Pb, Ag-Sn, Ag-Pb, Cu-Sn, Cu-Pb and Tl-Sn.

Mr. A. C. Young, Mr. Arnold Pitt, and Mr. J. O. Wilhelm

On the effects of high frequency currents on supraconductors.

This is a continuation of the work of McLennan, Burton, Pitt, and Wilhelm on the effect of high frequency currents on the transition points

of supraconductors, particularly with regard to the dependence of the phenomenon on high frequency current strength.

Mr. E. O. Braaten and J. O. Wilhelm

The diffusion of helium and other gases through quartz.

Measurements of the diffusion of helium and other gases through quartz has been made: (1) for atmospheric pressure at temperatures from −180°C to +110°C; (2) for varying pressures at room temperature. Measurements for helium have been determined for (*a*) fused quartz bulbs; (*b*) fused quartz ground plates; (*c*) crystalline quartz plates cut perpendicular to and parallel with the optic axis.

Dr. J. K. L. MacDonald

Successive approximations by the Rayleigh-Ritz variation method.

The variation method for the approximate solving of boundary problems in differential equations is considered in relation to the relative positions of proper values in successive approximations. Theorems and processes are developed which should be useful for practical calculations.

Mr. M. F. Crawford and Mr. A. M. Crooker

The nuclear moment of arsenic.

The As IV lines λ 3216, 3190, 3109 ($4s\ 5s\ ^3S_1 - 4s\ 5p\ ^3P^\circ_{0,1,2}$) excited by an electrodeless discharge have been examined in the fifth order of a twenty-one foot concave grating. The line λ 3216 ($^3S, -^3P^\circ_0$) shows three components. As the $^3P^\circ_0$ term is not split the triplet structure corresponds directly to the hyperfine structure of the $^3S_1$ term. The measured interval ratio, 1.67, definitely shows that $I = 1\frac{1}{2}$. The structures of the other two lines confirm this value. This result is in agreement with the I value deduced by Tolansky from the hyperfine structure of As II.

Mr. M. F. Crawford and Mr. S. Bateson

The nuclear moments of the isotopes of antimony.

Hyperfine structures in the spectrum of Sb IV have been investigated. The structure of λ 3735 has been completely resolved and shows definitely that the I-values of the isotopes Sb 121 and Sb 123, are $2\frac{1}{2}$ and $3\frac{1}{2}$ respectively. The line λ 3687 which has been partially resolved, further supports this conclusion. These values agree with the I-values determined by Badami from hyperfine structures of Sb I and II. The analysis is being carefully checked and extended to other transitions in Sb IV.

R. W. McKay

Measurement of dielectric constant.

A modified Schering bridge having no *variable* resistances in the measuring circuit has been developed for measuring the dielectric constants of dilute solutions of electrolytes over a range of concentrations up to one hundredth normal. At a frequency of 50 kilocycles the accuracy is one-quarter percent or better. A number of sources of error and methods of eliminating them are discussed.

Mr. A. M. Crooker

Paschen Back effects on the spectra of thallium.

The Paschen Back effect of several visible thallium lines has been investigated at a field strength of 25.3 kilogauss in the second order of a three metre concave grating. The complex patterns obtained are

shown to agree well within the limits of experimental error, with the theoretical ones deduced from the intermediate field equations of Goudsmit and Bacher.

Miss May Annetts

The effects of cathode rays on colloids.

The effects of cathode ray bombardment on positively and negatively charged metal hydrosols have been investigated with regard to (*a*) the stability of the sols, (*b*) the rate of heating of these sols as compared with that of pure water.

Mr. Colin Barnes and Mr. S. Levine

Sedimentation Equilibrium in colloidal suspensions.

Using the distribution formula of Boltzmann, taking into account the electrostatic forces between the particles of the suspension, an approximate expression is derived for the variation of concentration with depth. The forces between the particles are determined by the charges and by the surrounding ionic atmospheres. Practically constant concentration is established for particle separations of the order 5-20 x particle diameter, which is in reasonable agreement with experimentally determined "limiting concentrations."

Mr. H. W. Lohse

Quantitative analysis for potassium by means of the spectrograph.

For the purpose of determination of the concentration of potassium in solutions these are atomised and the vapour is carried up in an acetylene flame by means of an air stream. The intensities for the potassium line 4047.2 A.U of unknown and of standard solutions are compared photometrically.

Mr. H. D. Smith and Miss F. M. Quinlan

Rotational Raman effect of polyatomic molecules.

An experimental arrangement was devised for studying the rotational Raman effect of some polyatomic molecules, at various temperatures up to 100°C. The incident exciting radiation of λ 2536 Å from a powerful quartz mercury lamp irradiates gases at several atmospheres pressure in a large quartz Raman tube. The rotational Raman effect of methyl alcohol and ammonia are being studied.

Mr. H. D. Smith and Mr. F. G. A. Tarr

The Raman effect with gaseous carbon dioxide.

A new experimental arrangement suitable for the investigation of the Raman effect of gases at a pressure of 30 atmospheres over a temperature range from 0° to 200°C is described. The vibrational Raman effect with gaseous CO_2 has been studied at various temperatures.

Mr. G. A. Purdy

Distribution of arsenic in the rabbit.

Rabbits were treated for some five weeks with intravenous injections of arsenic colloid, the injections being made about three times a week, and in all each rabbit received about 20 milligrams of metallic arsenic. They were then dissected and various organs tested for the retention of arsenic. It was found to be specific in each case. Untreated rabbits from the same litter, which had been kept on the same diet, were used as controls. The chemical method used was the Gutzeit test.

B. Researches under the direction of Professor John Satterly, in collaboration with—

Mr. H. Givens

Further investigation, by the use of interference fringes, of the shape of the profile of a liquid film draining on a vertical wetted plate.

More careful measurements show that the profile is not strictly parabolic as was deduced by the mathematical analysis of Jeffreys (confessedly approximate). The difference between the two curves may be expressed as an exponential term. The profile often shows a wave due probably to uneven lifting of the plate from the water and the position of this wave is useful in the determination of the velocity of points on the profile. The effects of evaporation have also been studied.

C. Researches under the direction of Professor L. Gilchrist, in collaboration with—

Mr. A. A. Brant

Application of the central line electrode method in the location of a peridotite dike near Thetford, Quebec.

The dike was fairly definitely located at the place where the investigations were made owing to the fact that the dike was a better electrical conductor than the adjacent quartzite and slate and the covering glacial overburden. It is supposed that this was due to the presence of electrolytical conditions in the faults and shear zones where serpentisation of the peridotite had taken place.

Mr. A. A. Brant

Location of the magnetic poles associated with a peridotite dike near Thetford, Quebec.

At two places of pronounced magnetic anomalies detailed measurements were made with vertical and horizontal magnetometers and with a declinometer and the centres of magnetic force were determined by vector methods.

Mr. A. H. Woodcock and Mr. W. H. Tovell

An improved method of measuring the visibility of interference fringes has been devised and some information has been obtained in the constitution of the source of helium light of wavelength $\lambda = 6678$ A.U.

Mr. A. A. Brant

On the problem of the determination of underground potentials and resistances from measurements of the distribution of potentials on the surface.

Solutions of the differential equations for the steady state have been obtained for the approximate boundary condition associated with the Central Point and Central Line Electrode Arrangements for certain non-homogeneous media. The results appear to be applicable in geophysical exploration.

D. Researches under the direction of Professor H. A. McTaggart, in collaboration with—

Mr. G. N. Patterson

Experiments on the laminar flow of air.

The breaking away of air flow from the curved walls of a divergent channel was observed for both stable and unstable types of flow.

Curves for the velocity distribution were obtained from observations of the motion of small particles suspended in the moving air. The experimental velocity distribution was then compared with that obtained by Blasius from theoretical considerations.

Mr. R. Richmond

Experiments on the strength of monomolecular films and the Brownina movement in a plane surface.

E. Researches under the direction of Professor H. J. C. Ireton, in collaboration with—

Mr. J. P. Blewett

An X-ray analysis of thallium-tin alloys.

The analysis has been carried out by the powder method using a Coolidge X-ray tube with molybdenum target. The series shows a eutectic region from 0 to 80 per cent. thallium and a solid solution of tin in thallium from 80 to 100 per cent. thallium. A change from α to β thallium occurs on addition of tin to pure thallium. The results are being co-related with the eutectic diagrams.

Mr. J. P. Blewett

Two variations of the powder method of X-ray crystal analysis.

Two focussing principles are introduced to concentrate greater intensity in the X-ray diffraction patterns and hence shorten the long exposures usually required. In the first case a converging beam is focussed in much the same manner as the beam is focussed in the Seeman-Bohlin method. The second method requires a parallel beam and a flat specimen which is oscillated by clockwork.

Mr. W. F. Oliver

The crystal structure of supraconducting metals above and below the critical temperature.

The crystal structure of tin and lead are being investigated above and below their critical temperature. An Ott-Selmayr or Shearer X-ray tube is used to produce X-ray diffraction spectra which are recorded by a modified Seeman-Bohlin type of camera.

F. Research by Mr. Colin Barnes in collaboration with Dr. A. R. Gordon

The equilibrium between hydrogen, bromine, and hydrogen bromide computed from spectroscopic data.

Physiology, under direction of Professor C. H. Best

Among the interests of the staff of a department responsible for teaching and research in one of the fundamental medical sciences should be the provision for an opportunity for the members of other departments to keep abreast of the advance of knowledge. Physiology has made such rapid strides during the last decade that considerable effort is required on the part of those who base their teaching upon physiological knowledge to keep pace with its progress. It is, of course, very discouraging to teachers of physiology if their pupils are not encouraged to apply their recently acquired knowledge of this subject. The University of Toronto Physiological Society held twenty-one meetings during the past year, and there was always an excellent attendance from the staffs of other departments. Professor Babkin and Professor Beatty of McGill University, Professor Bronk of the University of Pennsylvania, and Professor Corner of the University of Rochester, presented very valuable communications before the

society. Papers were also contributed by members of the staffs of the departments of biochemistry, pathological chemistry, pharmacology and neuropathology. The remainder of the papers were presented by members of the staffs of the departments of physiology and physiological hygiene. Each of the senior students in physiology presented a paper before the Physiological Journal Club, which also held weekly meetings during most of the academic year. There are, therefore, two meetings each week during at least twenty-one weeks of the academic year at which physiological subjects are discussed, and to which interested members of other departments are cordially invited.

The teaching of physiology to the medical students was made somewhat difficult this year by the change in time-table which necessitated a repetition of the course in nerve-muscle physiology.

An exceptionally large number of lectures have been delivered this year by members of the staff before biological and medical societies in Canada and the United States. The head of the department has been invited to give a series of lectures in London, England, under the auspices of the University of London.

The researches on the significance of choline and fat metabolism have been carried on under the direction of the head of the department by Miss M. E. Huntsman and Mr. O. M. Solandt, and several reports have been published. This field is developing in a most interesting way, and promises to yield very significant results.

Dr. E. T. Waters, in collaboration with the head of the department, has conducted a study of the phosphate changes produced by sugar injection into the blood of dogs at various intervals after ligation of the pancreatic ducts. The insulin content of the degenerated glands has been assayed by a method which was previously found to give optimal results. Dr. Waters and Dr. D. W. G. Murray, of the department of surgery, have continued their work on the phosphate changes in the blood of infected animals. Dr. Waters has also worked in collaboration with Dr. A. H. W. Caulfeild of the Connaught Laboratories. A study of the immunologically active carbohydrates and proteins which may be isolated from ragweed pollen is being conducted.

Investigations into certain phases of calcium metabolism were carried out by Professor N. B. Taylor in collaboration with Dr. C. B. Weld and Mr. J. F. Sykes. Special attention was directed toward the absorption and excretion of calcium and the effect of irradiated ergosterol and the parathyroid hormone upon calcium metabolism. The nature of the calcium compound responsible for the hypercalcaemia of ergosterol and parathyroid overdosage was investigated by means of transfusion methods. A preliminary report of the latter work was reported to the Royal Society of Canada in May of this year. As an appreciation of his experimental work, the faculty have awarded Dr. Weld the Starr Gold Medal for 1932. Dr. Weld has, as during the last year, spent only a part of his time in this department, his mornings being devoted to work upon the wards of the Hospital for Sick Children in accordance with arrangements made with the department of paediatrics. Experiments concerning the effect of bile upon the toxic action of irradiated ergosterol were extended this year. Mr. Sykes made this work the subject of his thesis for the M.S.A. degree. A preliminary report of this investigation was communicated by Professor Taylor to the XIV International Physiological Congress at Rome last September. Dr. G. K. Harrison assisted in experiments upon intestinal obstruction. The results of these investigations indicate that distension of the bowel wall is the primary cause of death. Loss of chloride is a secondary factor. A short account of this work was communicated to the Montreal Physiological Society last April.

The irregularities which Dr. E. Fidlar previously encountered in the analysis of air have been related to heating with the platinum spiral when removing combustible gas after the use of pyrogallol. The essential nature of the change is unknown but there appears to be a cumulative influence which affects subsequent samples of air in the same apparatus. Present experience and a few

records in the literature suggest that oxygen may be the source of the disturbing factor.

Dr. Ruth C. Partridge, who has carried out most of her research work this year in the department of physiological hygiene, has extended her studies of nerve impulses. Her work on vagus impulses from the lungs has been published, and a study of vagus impulses passing to and from the stomach, conducted in collaboration with Dr. M. J. Wilson, is in process of publication.

In the section of general physiology, which is under the direction of Professor Laurence Irving, the developing eggs of the speckled trout have afforded a new and useful material for investigation. The embryos in these eggs grow from single cells to active free swimming larvae in about 50 days. Miss J. F. Manery and Professor Irving have studied the change in carbon dioxide content of the eggs which indicates the development of an alkaline reserve. The study shows the growth of an essential chemical characteristic of the organism from its earliest stages. As the bicarbonate of the eggs increases, chlorides are lost, showing a change in ionic composition of the eggs which is significantly related to the exchanges in many adult cells. Mr. K. C. Fisher has investigated the influence of temperature upon the heart beat of the embryo. A definite relation has been established which allows for characterisation of the basic processes supporting the heart beat. Observations on the relation of the heart beat to oxygen supply have been carried out upon the embryonic hearts. Results of particular interest obtained with the collaboration of Mr. Hanes of the Ontario Research Foundation showed that the inhibiting effect of carbon monoxide on the heart can be reduced by light. Mr. Fisher is preparing an electrical device for the precise measurement of temperature in tissues such as muscle. A study of the postmortal changes in the gastric mucosa has shown that lactic acid is formed there, although it has not been determined whether it is concerned with the secretion of gastric juice. The electrical potential of the mucosa of frogs is also being examined in the hope of further characterising the process of gastric secretion. All these studies are directed toward the general investigation of the acid-base equilibrium in physiological processes, the problem of hydrochloric acid secretion, and an approach to the metabolism of heart muscle.

It may be mentioned here that Dr. Irving, Miss Manery, Mr. Fisher and Mr. O. M. Solandt, of the staff of the department, and Dr. D. Y. Solandt and Mr. A. L. Chute, former members, will be carrying on investigations at the Marine Biological Laboratory at Woods Hole during the summer. Their experience with different material and their association with a number of active investigators from other universities is very valuable.

Psychology, under direction of Professor E. A. Bott

During the session 1932-3, three students were awarded the degree of Doctor of Philosophy in Psychology and eleven the degree of Master of Arts. The theses by these students and the members of staff responsible for their supervision were:

For the Ph.D. degree:

Under Professor Bott: Mr. Douglas J. Wilson—Antagonistic Muscle Action during the Initiatory Stages of Voluntary Effort.

Under Professor Chant: Mr. Laurence D. Whisler—Multiple Factor Analysis of Generalised Attitudes.

Under Professor Line: Mr. Kenneth H. Rogers—Intelligence and Perseveration related to School Achievement.

For the M.A. degree:

Under Professor Blatz, at the St. George's School for Child Study:

Miss Beatrice V. Fred—A Study of Companionship among Preschool Children.

Miss Beatrice E. Gage—A Method for Investigating the Moral Judgment of the Young Child.
Dr. J. D. M. Griffin—A Guide for the taking of Psychiatric Histories and the Examination of Children.
Miss Margaret L. Husband—The Food Preferences of Nursery School Children.
Mrs. Alathena J. Smith—The development of a Mental Hygiene Programme under Public School Auspices in a small Suburban Community.

Under Professor Chant:
Mrs. Hattie B. Hedman—Analysis and Development of Formulae pertaining to Linear Correlation with special reference to the Tetrad Equation.
R. B. Rochester—An Exploratory Study of Adjustment in a Secondary Boys' Boarding College.

Under Professor Line:
Miss Mary E. Ford—An Evaluation of the Results obtained with the Knox Cube Test.
J. Stanley Glen—The Relationship between Intelligence and Achievement of Elementary School Children.
Morgan D. Parmenter—The Ambitions of Public School Children.

Under Mr. J. D. Ketchum:
Paul I. Wolinsky—A Study of Recidivist and Non-recidivist Delinquents in the City of Toronto.

The following additional researches have been conducted during the past session by members of the staff in Psychology and of the St. George's School.

In Child Psychology, Helen McM. Bott, with the assistance of graduate students in the St. George's School, has completed a comparative analysis of the methods employed in social studies that have been published concerning pre-school children; also a preliminary local study upon the development of personality in young children. These monographs, and a manual on Student Training in Child Study by the staff of the School, are in press as three numbers in a newly established University of Toronto Child Study Series.

Professor S. N. F. Chant this year has commenced a study upon the influence of context in the interpretation of obtained values of the coefficient of correlation; and he has continued (with the collaboration of Dr. G. P. Cosgrave) his studies on the development of interests in employment and the relation of interests to vocational adjustment.

Professor W. Line has developed a number of approaches for measuring the effects of certain factors and teaching procedures upon the performance of children of preschool and of public school age. In particular, with the assistance of Miss E. Kaplan, factors underlying the increase in I.Q. of preschool children have been studied; and with Dr. J. D. M. Griffin, the relation of left-handedness and speech defects in public school children. A method of applying the Factor-Analysis technique as a means of measuring school progress at various grade levels has been successfully tried.

Mr. J. D. Ketchum with his graduate students in social psychology has conducted a number of exploratory surveys in Toronto upon social attitudes and behaviour. Selected institutions and organisations have been utilised for this purpose: The Juvenile Court, settlements, parishes, boys' and girls' clubs. The following techniques are being critically employed and evaluated: The spot-map, the questionnaire, the life history document. Data from these investigations reveal the possibility of planning fruitful studies with our own city as a social laboratory.

Two instances of formal co-operation between the department of psychology and branches of Public Service deserve mention on account of the important research problems which are being furthered through this desirable step in

organisation. First, in connection with the Provincial Mental Hospital Service, the position of Mr. C. R. Myers as a staff member in that Service and in our department has added not only in the better selection and training of assistants who are to enter the Service but in the outlining of psychological problems of great theoretical and practical interest. For example: Occupational curricula suitable for the mentally sub-normal, statistical analyses of case types coming to provincial mental clinics, an annotated bibliography and manual for the clinical examination and treatment of speech defect cases, laboratory methods to assist in the early detection of psychoneurotic traits.

Secondly, in the field of animal psychology Mr. K. S. Bernhardt of the staff in psychology has been asked to assume charge of the animal training in the Research Nutrition Laboratory of the Sick Children's Hospital under Dr. Alan Brown and Dr. F. F. Tisdall. A major research upon the relation between vitamin B deficiency and learning ability in rats has thus been made possible, the results of which promise to be of clinical importance with children. The close relationship between Comparative Psychology and Child Psychology in problems of normal development as well as in those requiring medical treatment is being strengthened by this inter-departmental plan of research.

Radiology, under direction of Dr. G. E. Richards

Last year reference was made to a new opaque preparation which had become available under the name "Thorotrast" by means of which visualisation of the liver and spleen was made possible. Two years of experimental work have now been completed with this preparation and a number of papers issued by Dr. W. H. Dickson and Dr. D. Irwin. The original hopes regarding it have been more than fulfilled and several newer applications developed. Interesting applications in connection with visualisation of the placenta have been developed and this has now been extended to general arteriography especially of the cerebral vessels and those of the extremities with obvious applications to such disease as Burger's disease.

In the field of radiotherapy the chief matter of interest generally has to do with the possibilities contained in very high voltages up to one million or higher. Up to the present, this is an entirely experimental study and no one can predict what may be its future. In our own work we have been restricted to standard methods by the limitations of existing equipment and can report no progress in this respect.

Surgery, under direction of Dr. W. E. Gallie

During the year the following experimental studies have been conducted by the department in the laboratories of the Experimental Research Committee:

Dr. G. D. W. Murray: The effect of infection on insulin production. The effect of heparin on thrombosis.

Dr. S. D. Gordon: The effect of infection on the thyroid gland. The role of the pyloric portion of the stomach in gastric secretion.

An exhaustive clinical research has been conducted by Dr. F. I. Lewis in conjunction with Dr. Dickson of the department of radiology on gastric movements and on post-operative vomiting. Two important papers on the subject are in the Press.

This year has seen the establishment of three special clinics at the General Hospital, i.e., one for plastic surgery under Dr. S. D. Gordon, one for rectal surgery under Dr. J. A. MacFarlane and one for varicose veins and ulcers of the leg under Dr. R. M. Janes and Dr. J. H. Couch. Two new follow-up clinics have also been established for the study of the late results of the treatment of goitre and of the surgical diseases of the stomach. These new follow-up clinics

are in addition to one previously established for the study of the results of the surgical and radiological treatment of cancer of the mouth conducted by Dr. Wookey in association with Dr. Richards of the radiological department.

Therapeutics, under direction of Dr. R. D. Rudolf

Dr. Arthur Smith, who was a part-time research fellow until November last, has not yet finished the research but is now working in his own time. It promises to be of great value in showing the effects of high blood pressure upon the blood picture, and seems to demonstrate that the lowering of this does not produce retention of undesirable products.

Report of the Committee for Experimental Research in Medicine

J. G. FitzGerald, M.D., LL.D., Convener

The Committee for Experimental Research in Medicine, through which coordination of the facilities for the conduct of experimentation by members of the medical departments in the Banting Institute is effected, has during the session of 1932-1933 provided opportunities for a very large volume of work.

In general, the laboratories under the supervision of the Committee are accessible to the staffs of nine clinical departments and one sub-department. No less than thirty members of these departments availed themselves of these opportunities during this year. The departments of medical research, pathology and bacteriology, surgery, medicine, and pathological chemistry were those from which the largest numbers of workers were drawn. It should also be noted that the conduct of certain routine work for the Toronto General Hospital has been undertaken as in previous years.

In all, one thousand eight hundred and forty-six experiments on animals have been done, and two thousand sections of tissues prepared. A careful record of each of these animal experiments is made, and is at all times available for scrutiny. The personnel engaged in the varied and arduous duties of assisting in these tasks have been hard pressed to meet the demands made upon them. They have shown the utmost devotion and diligence in their work. Their duties necessitate long hours of service daily, and, except for very brief holidays, a portion at least of every day must be spent by some of them in the laboratories in the care and supervision of the animals. As a result of the instruction and supervision which they have received from members of the scientific staffs of the various departments, a group of exceedingly expert technicians and assistants has been assembled. The members of the Committee desire to acknowledge this excellent service and to direct attention to them, in this report.

It is necessary to emphasise at this time that as a result of the great increase in the number of investigations being carried on, the quarters provided, both for housing animals and for the conduct of experimental work, have become badly overcrowded. It would seem that at a very early date an effort must be made to provide for an extension of the animal quarters in order that the laboratories designed primarily for experimental research should be used for that purpose only.

The Committee is again indebted to Professor F. G. Banting for very generously augmenting the appropriations made available for the support of the work during the present session. Without this many investigations could not have been undertaken, and the work would have been seriously curtailed. There is perhaps no responsibility of the Faculty of Medicine of greater importance and significance than the provision of adequate opportunities and facilities for the conduct of research. It is obviously necessary, then, that generous support be provided for the purpose of this Committee. The present very difficult period

has made the fulfilment of this almost impossible. It is hoped, however, that the situation is but a temporary one.

Dr. D. E. Robertson has again acted as Secretary of the Committee most efficiently, and has very generously devoted no small amount of time and energy to the duties associated therewith.

Report on Research in the Faculty of Dentistry

The following problems have been under investigation in the Faculty of Dentistry during the past session:

An investigation into the possible application of stainless steel in the practice of Orthodontia, by F. J. H. Barr, D.D.S.

A radiographic and photomicrographic survey and classification of pathological conditions about the teeth and maxillae;

Photomicrography and its special application to the various phases of dentistry; by L. J. Coté, D.D.S.

The Histo-Pathology of apical granulomata, by J. Kreutzer, D.D.S.

The Principles and Practice of Actinotherapy in dentistry, by H. M. Corlett, D.D.S., B.Sc. (Dent.)

A study of expansion of die materials as applied to porcelain inlay technique, by L. Davis, D.D.S., B.Sc. (Dent.)

Dental Infection: its relationship to secondary anaemia, by E. M. Dutton, D.D.S., B.Sc.

Electrical Welding, as applied to precious metals, by J. H. Downer, D.D.S.

A study of the antiseptic properties of copper amalgam;

A histological and embryological study of dental fissures; by F. E. Harris, D.D.S.

Quantitative analysis of mucin in saliva and its relation to health and disease, by T. Marsh, D.D.S.

The toxic effect of low percentages of oxygen with nitrous-oxide in anaesthesia, by J. G. Perkin, D.D.S.

A study of Necrotic Gingivitis, by D. Tanner, D.D.S.

A study of stainless steel and its use as a denture material, by R. L. Twible, D.D.S.

A study of the biological changes in the periodontal membrane throughout life, by R. G. Agnew, B.A., D.D.S.

A study of salivary mucin in relation to the teeth, by Doris F. J. Berry, B.A.

School of Engineering Research, Faculty of Applied Science and Engineering

The Committee of Management of the School of Engineering Research has learned with deep regret of the decision of the Governors of the University, that, owing to the financial stringency, no funds will be available for research purposes during the session 1933-34. The Committee has decided that the research work must continue with as much energy as the complete absence of paid research assistants will permit.

In view of the distinct contributions which the School has made to industrial and engineering research, as well as the fine enthusiasm for research which this movement has injected into both staff and students, as reflected in the rapid growth in this faculty of the work of the Graduate School, it is the Committee's earnest hope that the present curtailment of funds will be of short duration, and that the research work of this faculty will not be permitted permanently to recede because of lack of funds, and that the School of Engineering Research may shortly continue to make its contributions in research to the natural resources and engineering practice of the country.

Department of Civil Engineering

Under the direction of Professor C. R. Young

(with W. B. Dunbar)

Pressure on Deeply Buried Sewers—Final readings are shortly to be made on the pressure cells placed six years ago on the deeply buried sewers of the North Toronto System. Following this a paper, now nearly completed, will be submitted for publication. Information of value with respect to pressures realised will be made available in the report.

Lateral Support of Steel Columns and Struts—The report on an experimental study of the lateral support of nineteen columns is now in course of preparation and should be finished by the autumn. Data of considerable value to the designer of steel columns and struts have been set up.

(with K. B. Jackson)

Restraint of Welded Beams and Girders—A report on the experimental work carried on for the past four years in connection with the rigidity of welded and riveted connections is now nearly completed. Several requests for papers on the subject have been received and the communication of the tentative results to those particularly interested has been attended by a gratifying reception.

(with A. E. Berry, and L. A. Kay)

The Disposal of Dairy Wastes—Useful work has been in progress during the last two years on the problem of the disposal of dairy wastes and a paper is in course of preparation.

(with A. E. Berry and W. S. R. Edmonds)

Deep Well Water Supplies—A study of the supply of water from deep wells has been conducted during the past two years and a paper is now in course of preparation.

(with M. W. Huggins)

Thrusts of Arches with Two and Three Hinges—A useful theoretical and experimental study has been made of the horizontal thrust developed in two-hinged arches of various proportions and a paper is in course of preparation.

(with W. H. M. Laughlin)

Improved Methods of Wind Bracing Design—Studies of modern wind bracing design for tall buildings have resulted in throwing additional light on certain difficult features and when somewhat more work has been done on the subject a paper will probably be available.

(with J. G. M. Baxter)

Bearings for Concrete Structures—Experimental work on concrete rocker bearings has revealed important information not hitherto available. With a little further extension of the work it is believed that some valuable data for the designing engineer may be made available.

(with M. Levin)

Uncertain Points in the Design of Tank Walls—Theoretical and experimental work on the allocation of pressure on the walls of cylindrical reinforced concrete tanks between the cantilever and circumferential systems has yielded information of interest and importance. Work is being continued in this field.

(with G. V. E. Logan)

Long Span Rigid-Frame Steel Bridges—A design study is being made of the possibility of attaining spans of 250 or 300 ft. in rigid frame steel structures. As the field is promising, the work will be continued if opportunity offers.

Under the direction of Professor T. R. Loudon

The problem of determining the location and limits of "hydraulic jump" has been under investigation by means of stream line theory as determined by the use of functions of a complex variable.

Under the direction of Professor K. B. Jackson

A comparison has been made of the intensity and duration of various forms of artificial illuminants used in photography.

The infra-red focal length of photographic objectives has been determined.

The work on photographic sensitometry of positive emulsions, including the use of projection equipment, has been continued.

Department of Mining Engineering

Under the direction of Professor H. E. T. Haultain

(with W. E. Johnston)

Work has been continued on the study of tellurides, more particularly in relation to their solubility in cyanide solution, with ores from Northern Ontario, Colorado, and West Australia. The fact has been definitely established that gold-bearing tellurides are soluble in cyanide mill solutions, contrary to the generally accepted idea. Various obscure problems in connection with the gold associated with the tellurides have been investigated, and an entirely new and important light has been shed upon them. The new apparatus devised has proved successful far beyond anything hitherto known in the separation of minute quantities of special minerals from mill products.

(with E. J. Hick)

Studies have been continued in connection with the determination of the degree of grinding in the fine grinding process. The discovery of an unrecognised principle lends considerable promise to this investigation.

(with I. J. W. Johnston)

A study has been made of methods for size analysis of very finely divided material such as cement and ore mill products. A new type of apparatus, with distinct advantages in accuracy and speed, has been developed.

(with B. S. Crocker)

A study has been made of the difficult metallurgy of the Beattie ore which has shed light on the limitations of the cyanide process in connection with this ore and minerals not before known to exist in this ore have been isolated and identified. In connection with this work new grinding and polishing apparatus has been developed which is a valuable addition to our equipment.

(with Hartley Sargent)

A study has been made of the separation by preferential flotation of the silver minerals from the zinc minerals of certain British Columbia ores, and a definite advance has been made in this difficult problem.

Under the direction of Professor F. C. Dyer

(with H. L. McClelland)

Work has been continued on the problems of the cleaning of seeds. The semi-commercial machine installed has given some very satisfactory results. As a result of the operation of this machine and of laboratory work many of the difficulties of practice inherent to the nature of seeds have been solved. Some difficulties in the way of securing larger capacity remain to be overcome. The improvements are being incorporated into a remodeled machine.

Laboratory work on conditions methods to bring more seeds under the scope of the separation process was continued with promising results.

Department of Mechanical Engineering

Under the direction of Professor R. W. Angus

(with R. Taylor and C. G. Heard)

An investigation was conducted into the relative accuracy of pressure measurements made with different points of piezometer connection to pipes.

This investigation showed that errors of 4 or 5 feet might easily result in pressure measurements due to inaccuracy of connection. A paper dealing with this subject is now ready for publication.

(with C. G. Heard)

This was a study made to find the conditions existing inside a pipe at points of sudden enlargement and contraction. Piezometer connections were made throughout a fair length of the pipe and pressure measurements made so as to determine the exact shape of the jet and the coefficients dealing with this type of problem. A report on this research will be ready within the next two or three weeks.

(with L. E. Jones)

A study has been made on the hydraulic jump in open channels, the glass trough in the laboratory being used for this purpose. This is a continuation of a study which was commenced last year.

Under the direction of Professor E. A. Allcut

(with J. N. Corry)

A further investigation was made on the heat output of concealed radiators. The influence of the size and form of the enclosure was studied in detail. The results have been published in Bulletin No. 140 of the School of Engineering Research.

(with D. T. Hewson)

An investigation into the laws of heat transmission as applied to insulating materials was continued with a 12 inch hot plate. It is expected that this will enable results to be obtained on thin materials much more rapidly than is possible with the 24 inch plate used hitherto.

(with E. B. Hymmen)

The flow of air from, and the temperature gradients around, a tube, which was heated electrically to a known temperature were investigated. This is intended to be the first of a series of researches on heating problems.

(with A. L. Hossack)

The combustion characteristics of various fuel oils in a high speed, compression ignition oil engine were investigated.

(with B. Cowan)

The flow conditions in the exhaust bend of a steam turbine were investigated. The object of this research was to discover reasons for apparent discrepancies observed when making the standard tests on this machine.

Department of Architecture

Under the direction of Professor E. R. Arthur

Work upon the early architecture of Ontario has been continued particularly with respect to old furniture and tombstones. An illustrated brochure on tombstones is in course of preparation and will shortly be published.

Department of Chemical Engineering

Under the direction of Professor J. W. Bain

(with W. M. Inouye)

The research on lignin carried on by Mr. Inouye during the two previous sessions has been continued. The action of a number of oxidizing agents has been studied, but in all cases the products have been resinous substances from which it has been impossible to obtain definite chemical compounds. No information can be found in the literature regarding the reactions investigated, so that the results, though disappointing, are an original contribution to the chemistry of lignin.

(with G. F. Rishor)

A series of attempts to reduce the so-called nitrolignins led to a study of the latter. Various and conflicting data are to be found in the literature regarding these compounds, and definite progress has been made towards clarifying the present situation.

(with G. V. Jansen)

A study of the action of chlorine on lignin has been commenced, and a large number of chlorinations under various conditions have been carried out. The data at present in existence in the literature are far from satisfactory, and sufficient progress has already been made to place the knowledge of this reaction upon a more definite basis. Since this is the fundamental reaction in the bleaching of all pulp and paper, any clarification of the process would be valuable.

(with J. A. Stevenson)

A study of the decomposition of cellulose when heated for long periods at 200°C., which was commenced some years ago, has been continued. The gases evolved have been collected and analysed more thoroughly than had been done previously, and further attempts have been made to separate and identify the water soluble substances.

(with C. P. Olstad)

An investigation of the properties of nickel carbonyl, carried on in previous years by Messrs. Holm and MacLean, showed that this substance decomposed before its final resolution into nickel and carbon monoxide. A quantity of the decomposition product has been prepared with difficulty and its composition determined. While apparently a basic carbonate, comparison with a carbonate of similar composition prepared in the laboratory has not been satisfactory. The preparation and properties of some basic carbonates of nickel have been investigated.

Under the direction of Professor M. C. Boswell

(with R. K. Iler)

The investigation of the properties of hydrated nickel oxide of various degrees of hydration has been continued. It has been found that the particle size is a function of the water content, which in turn is a function of the absolute temperature to which the hydrated oxide has been heated. A method has been devised for the quantitative determination of the water content by chemical means. The chemical work was found to be supported by X-ray photographs taken under the direction of Professor Ireton of the department of physics. A mathematical equation has been derived connecting particle size and temperature which is in conformity with the measurements. This work was embodied in a thesis for the degree Ph.D.

(with W. M. Hutcheon)

The study of the transformation of cellulose into oxalic acid has been continued and the conditions determined under which the yield of oxalic acid can be greatly increased.

(with G. P. Beal)

A chemical method has been devised for the isolation and recovery of sulphur dioxide from gaseous mixtures such as smelter gas.

(with H. L. Sandford)

A further quantitative study has been made of the properties of hydrated ferrous sulphide, particularly its behaviour towards free oxygen and free hydrogen. This work throws considerable light upon the process devised in this laboratory for the transformation of ferrous sulphide into an active catalyst for the reduction of sulphur dioxide.

Under the direction of Professor E. G. R. Ardagh

(with F. C. Rutherford)

A study of some of the conditions affecting the formation of hydrazones and osazones is in progress.

(with H. W. Owens)

The mechanism of the inhibiting action of certain organic compounds upon the rate of corrosion of iron in brine has been elucidated, and some very effective inhibitors have been discovered. The results of the investigation will appear in print shortly.

Under the direction of Professor E. A. Smith

(with W. H. de Montmorency)

A paper on the thermal stability of Ontario lignite was presented at the June meeting of the Canadian Chemical Association and will appear in Fuel Research Publications.

(with I. C. Hardy and R. C. Williamson)

A research on the forms of sulphur compounds in New Brunswick shale and Alberta tar sands has been concluded and will be published this coming year.

(with G. V. Jansen)

An industrial research problem on the weighting of silk is in progress.

(with N. R. Fasken)

A study of some of the factors affecting the production of 30% hydrogen peroxide is in progress.

Under the direction of Professor R. R. McLaughlin

The action of iodine on rubber is being investigated, with the object of preparing rubber-iodine compounds with a low iodine content. Work upon the synthesis of an arsenic ester of glucose has commenced.

Department of Electrical Engineering

Under the direction of Professor T. R. Rosebrugh

The studies in connection with the subject of atomic units have been continued.

Department of Metallurgical Engineering

Under the direction of Professor J. A. Newcombe

(with C. L. Sherman)

Two steels containing the "banding structure" were tested in order to find the effect of the structure on the mechanical properties. Efforts were made to eliminate the structure by heat treatments and to discover the cause of the structure in the particular steels investigated.

Under the direction of Professor R. J. Montgomery

(with E. G. Couch)

A study has been made of the coefficient of elasticity and the temperature of plastic flow of refractories such as are used in assay crucibles with special attention being given to the use of Northern Ontario fire clay in such bodies.

(13) PUBLICATIONS

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(14) REPORT OF THE DIRECTOR OF UNIVERSITY EXTENSION AND PUBLICITY

(W. J. Dunlop, Esq., B.A., B.Paed.)

It is rather surprising that, in a time such as this, the total enrolment in courses and classes in this department should be only 147 less than it was last year. 2984 men and 1931 women (4915 in all) took continuous instruction and 15,440 listened to extension lectures.

In some cases there were increases. The enrolment in the Teachers' Course was higher by 23 than last year and the Workers' Educational Association had over 300 more students than in the previous year.

On account of the increase in standards it will not be necessary to carry on preparatory work in Upper School subjects much longer. There was a decrease of 178 in that phase of our work this year; before long, almost all teachers will have their Upper School standing and this preparatory instruction may be discontinued within the next two years.

The increase in standards affected also the courses in Occupational Therapy and Physiotherapy in both of which no First Year instruction was offered during the past session.

Especially gratifying is the increase in the number of those taking the Teachers' Course. The teachers of this Province are beginning to realise, to a greater extent than ever before, that they must improve their academic qualifications if they hope to have an opportunity for promotion in their profession. The University again demonstrated its interest in the welfare of teachers when, during the month of June, a new arrangement was made in order to enable students of the second year course in the Normal Schools to write the examinations in first year English and history in May of each year hereafter. This provides a wonderful stimulus to ambitious teachers and will almost certainly result in a marked increase in the enrolment in the Teachers' Course. Our Teachers' Classes, held in the evenings, are very popular and enquiries regarding them have recently come in from two of the larger cities of the Province.

The people of the Province still make great use of our oldest form of extension service, the local or Extension Lectures. The number of these delivered during the past year was 178. These were distributed as follows:

Aurora 1, Ayr 3, Barrie 3, Belleville 1, Bowmanville 4, Chatham 3, Cobourg 3, Galt 1, Guelph 8, Hamilton 12, Kitchener 4, Lindsay 1, London 3, Midland 2, Niagara Falls 4, Orillia 14, Oshawa 15, Ottawa 5, Peterboro 7, Port Colborne 2, Port Hope 1, Port Perry 8, St. Catharines 5, St. Thomas 1, Simcoe 2, Stratford 1, Sudbury 1, Toronto 59, Welland 1, Whitby 2, Woodstock 1.

Those who delivered extension lectures this session were:

K. H. Rogers 24, N. A. MacKenzie 21, E. Goggio 12, A. Lismer 10, J. F. Macdonald 10, J. F. Parkinson 9, J. C. McInnis 8, S. N. F. Chant 6, L. T. Morgan 5, B. C. Diltz 4, Mrs. M. M. Kirkwood 4, V. Lange 4, E. J. Pratt 4, F. H. Underhill 4, G. S. Brett 3, G. W. Brown 3, H. J. Davis 3, Miss I. M. Biss 2, W. E. Blatz 2, E. K. Brown 2, H. M. Cassidy 2, G. A. Cornish 2, E. A. Dale 2, W. M. Drummond 2, Miss M. Fleming 2, Miss R. M. Home 2, T. F. McIlwraith 2, E. S. Moore 2, J. O. Wilhelm 2, W. J. Alexander 1, E. A. Allcut 1, C. A. Chant 1, N. W. DeWitt 1, P. Edgar 1, Miss M. B. Finlayson 1, G. M. A. Grube 1, W. L. Holman 1, G. E. Jackson 1, C. W. Jefferys 1, H. D. Kay 1, G. W. Knight 1, Miss C. M. LePrevost 1, John Line 1, J. W. S. McCullough 1, E. W. McInnis 1, H. S. McKellar 1, G. H. Needler 1, W. A. Parks 1, F. H. Walter 1.

Each year the Summer Session is a little larger than it was the year before. Those who enrol for instruction in Arts at that time are chiefly teachers who are unable, because of distance, to attend the Teachers' Classes which are provided

during the regular session. The courses in honour subjects, given in the Summer Session for those who wish to become specialists, are attracting larger numbers each year.

Thirty-Seven Evening Classes were carried on with an enrolment of 1822. Each class meets one evening per week for twenty weeks. There are no examinations, and no certificate of any kind is awarded. The students are adult men and women who are ambitious to obtain more knowledge. In every respect these are voluntary classes and for that reason they furnish an excellent index of the educational tastes of the community. It might be supposed that the great majority of these voluntary students would undertake to study the so-called "practical" subjects but such is not the case—the older studies are still the favourites; at least, English is. The list of the six most popular subjects, with the enrolment in each, is as follows: English, 250; psychology, 223; economics, 203; public speaking, 197; French, 153; journalism, 152.

Steady progress is being made by the Workers' Educational Association. Brantford, Brockville, Dundas, Galt, Hamilton (3 classes), Kingston, Kitchener, London (2 classes), Oakville, Peterborough, St. Catharines, Stratford, Toronto (13 classes), Windsor (2 classes), and Woodstock, were the centres in which this work was carried on. The fee is only $2.00 for the session and those who are unemployed are not asked for a fee. With the co-operation of Professor F. C. Auld and Mr. Finkelman of the department of law, bulletins on trade union law have been issued and have evoked expressions of appreciation from labour leaders and members of trades unions. The Workers' Educational Association is an important stabilising influence in the life of the Dominion of Canada and through it the University is serving an earnest and intelligent clientele.

Two refresher courses for nurses were arranged during the session, one in November and the other in May. The former was attended by 76 hospital staff nurses and the latter by 30 public health supervisors.

Instruction in economics was provided for 272 farmers in Aurora, Guelph, Milton, Omemee and Stroud. The lectures were followed in every case by prolonged and animated discussion.

Members of the Canadian Credit Institute to the number of 63 and 166 members of the Chartered Life Underwriters' Association were provided with instruction in a variety of subjects. Young men and women who are working for the examinations of the Chartered Institute of Secretaries and students in several other business organisations make use of our Evening Classes as a means of preparing for their own examinations.

Publicity has consisted chiefly, during the past year of news items in the daily and weekly papers and articles in magazines. Very little advertising has been possible. Two bulletins were printed, "A Brief History of the University" and a brochure describing the new botany building, and both were well received.

A year ago the Universities' Conference appointed a committee to carry on negotiations with the Canadian Radio Broadcasting Commission. As a result, arrangements have been made for series of lectures and undergraduate debates to be broadcast next autumn and winter, without expense to the universities. In the meantime, however, the Commission has asked this department to provide a weekly lecture on new books. Professor J. F. Macdonald of the department of English, University College, was asked to undertake this and has already given five of these lectures.

(15) REPORT OF THE DIRECTOR OF THE DEPARTMENT OF SOCIAL SCIENCE

(Professor E. J. Urwick)

The number of students taking the diploma course in Social Science showed some decline as compared with the "peak" number in 1931-32. Sixty-nine

students registered as against ninety in the previous year. This reduction is by no means to be regretted in view of the uncertainties surrounding the employment of professional social workers during the economic crisis. Moreover, it is noteworthy that the academic quality of the students continues to rise: a majority are now university graduates chiefly from honour courses. It is also satisfactory to record that several of the senior students have, during their second year, been able to undertake researches of some importance to social workers, particularly in connection with the social reactions of new methods of preventive care. It should be possible to carry this division of the work much farther in future, especially when the graduates from the new Arts course in sociology are enrolled in the department.

It is, however, the primary function of the department to prepare students for professional social work. For this, we depend to a peculiar degree upon factors outside the control of the University. First, we need the active co-operation of many individuals and agencies to make possible the practical training of the students; and secondly, we need the goodwill of those in charge of public and voluntary welfare work in order that openings may be available for our students, both as apprentices when their training is partly completed and as regular workers after graduation. During the past year, both the co-operation and the goodwill have been manifested in fuller measure than ever before. In spite of the grave difficulties by which all agencies have been oppressed, their leaders have accepted the burden of supervising the practical training of our students, not only willingly but gladly. And despite the fact that funds have dwindled and staffs have had to be contracted rather than expanded, our apprentice workers have been placed without difficulty, and before the close of the session openings for full workers had been offered to nearly two thirds of the graduating class. For help in both these ways we are indebted not only to established voluntary agencies but also to the Provincial and City Departments of Health and Welfare, especially to the Mental Hospitals under the Department of Health and to the Department of Family Welfare of the city of Toronto. It is worthy of record that the goodwill is not confined to our own Province. One of the leading agencies in Montreal has also given most valuable help by affording openings for two of our apprentice students.

The department continues to provide special courses for students from the principal schools of training for deaconesses and church workers in the city; and we have been glad to co-operate with the Departments of Public Health Nursing and of Occupational Therapy in the instruction of selected students.

(16) REPORT OF THE DIRECTOR OF THE DEPARTMENT OF PUBLIC HEALTH NURSING

(Miss E. K. Russell)

The report from this department for the year 1932-33 has two distinct pieces of work to chronicle: first, the regular work of the academic year, and second, the reorganisation by means of which the new School of Nursing has been brought into existence.

During the year, 47 students have been enrolled in the certificate and diploma courses in public health nursing. Also (as in the past two years) the members of the staff of this department have given direction to the course for Hospital Staff Nurses through co-operation with the Director of the Department of University Extension: this brought us an additional group of 13 students. Also a group of about 140 occasional students received instruction.

In addition to the above work two refresher courses were given by this department in co-operation with the Department of University Extension. The first was held in November for the benefit of hospital staff nurses; the second in May for public health nurses. In all 94 nurses enrolled for these courses.

The final task in teaching has been a continuation of the work on behalf of students and visitors from other countries; these have included nurses from Turkey, Porto Rico, Syria, Roumania, Japan, Poland and Finland. Most of these visitors have received fellowships from the Rockefeller Foundation enabling them to follow these studies in the United States and Canada.

At the end of this year 1932-33, this Department of Public Health Nursing becomes merged in the new School of Nursing. The new School starts its work in the building at 7 Queen's Park, formerly used as a residence for University College students. A lot of work has been done to put the old building into good shape, and the furnishing has proceeded gradually during the past few months. Negotiations have been carried on with the various teaching departments of the University, with the hospitals and with public health organisations and finally we have arrived at a basis of organisation for the work of the new School.

The main feature of the new work is a three year course in nursing which will take the place of the four year course which was inaugurated in 1926, though the students now enrolled in the 1st, 2nd and 3rd years of this latter course will finish under the four year arrangement. With a full control of the whole course and better facilities for the conduct of the work, it is hoped that a more satisfactory course can now be given in the three years than was possible in the four years of the earlier arrangement. It should be made clear, however, that the new three year course merely continues and broadens out the scope of the work which the four year course initiated. This new work has been made possible through the sympathetic interest and co-operation of the University, the Provincial Government and the International Health Board of the Rockefeller Foundation.

(17) REPORT OF THE DEPARTMENT OF MILITARY STUDIES

(Lieut.-Colonel F. Fraser Hunter, Acting Director)

I have the honour to submit the following report on the work in this department during the session 1932-33.

The enrolment in the Military Studies courses was as follows:

I year	11
II & III "	20
IV "	13

The term work showed a very high standard of attainment by the students in all years and the attendance at lectures was very good.

Special classes for the War Office (London, England) examinations for O.T.C. Certificates "A" and "B" conducted by this department were well attended and the candidates during the term made an excellent showing in map reading, tactics, military organisation and administration. Lectures on military geography, empire trade routes and various campaigns, including special lectures on certain fronts of the Great War and upon the modern armaments of the British and other armies, illustrated by lantern slides and otherwise, were delivered during the year. The department was indebted to the Chief of the General Staff, Ottawa, and to the General Staff, Military District No. 2 (Toronto), for cordial and generous assistance throughout the year.

There was an enrolment in these classes of 109 students from various faculties, including 32 students who are members of 17 Active Militia units attached to the C.O.T.C. for this purpose, and representing artillery, engineers, infantry and medical services. The numbers of candidates who actually sat for the War Office examinations held in March were as follows:—

Certificate "A" Artillery	4	Certificate "A" Infantry	29
" "B" "	5	" "B" "	12
" "A" Engineers	4	" "A" Medical	22
" "B" "	1	" "B" "	5

The results of this examination have not yet been received from England. The results of the November, 1932, O.T.C. (War Office) examinations were:—

Certificate "A" Artillery	1
" "A" Infantry	2
" "A" Medical	1

(18) REPORT OF THE UNIVERSITY HEALTH SERVICE (MEN)

(George D. Porter, M.B., Director)

1932-33

I.

The report for the year shows that there have been

Examinations

First year students	1002	
Second " "	704	
Senior "	379	
		2085
Re-examined by specialists		35
Total		2120

Results

Those found fit for physical training	95%
Those having some disability requiring corrective or light exercises	3%
Those unfit for physical training	2%

The following conditions account for unfitness for physical training:—

Cardiac trouble	8
Operations	7
Infantile paralysis	3
Bronchitis	2
Hernia	2
Diabetes	2
Rheumatism	1
Duodenal ulcer	1
Nephritis	3
Injuries	7

It is interesting to note that the average height and weight of the first year students in 1932-33 are greater than those in 1920-21.

In the first group of a thousand freshmen, average age 19 years, examined in 1920, the average height was 5 ft. 8 ins., and the average weight 138 lbs. This year among a similar group of the same age, the average height is 5 ft. 8¾ ins., and the average weight 141 lbs. Among these there are 105 men 6 ft. in height or over.

Among the second year students, we find that 56% of those who were classified last year below A. 1, had their physical standard raised during the year, while only 5% of the total class had their physical standard lowered owing to illness or accident during the year.

This year there has been added to the University Health Service a Mental Hygiene Consultant.

It is generally known that some find difficulty in adjusting themselves to the problems of student life, and it is felt that an opportunity should be afforded them to discuss their problems with a specialist in this field.

We are fortunate in having Professor Farrar as consultant in this work. Appointments may be made for advice and assistance—by men students through Dr. Porter's office, or by women students through that of Dr. Edith Gordon.

Illness during the year.—Apart from our usual epidemic of Influenza, we have had an exceptionally healthful year. Very few infectious diseases among the students have been reported.

The following are causes of absence from Physical Training classes for periods varying from one day to three months.

Colds		270	Concussion		1
Influenza		106	Trench mouth		1
Sore throat		25	Epistaxis		2
Tonsillitis		10	Frostbite		1
Bronchitis		4	Athlete's foot		2
Pneumonia		4	Scarlet fever		2
Pleurisy		3	Chicken pox		2
Laryngitis		2	Mumps		3
Pharyngitis		2	Skin diseases:		
Lymphadenitis		1	Ringworm	1	
Rheumatism		1	Scabies	1	
Neuralgia		1	Impetigo	3	
Gastralgia		11	Furunculosis	15	
Rhinitis		1	Eczema	4	
Neuritis		2	Acne	1	
Pyelitis		1		—	25
Sinusitis		8	Injuries:		
Hemorrhoids		3	Fractures	6	
Otitis media		3	Dislocations	7	
Synovitis		2	Sprains	80	
Appendicitis		1	Cuts	8	
Fistula		1	Abrasions	17	
Cardiac trouble		3	Burns	4	
Antrum "		4	Blisters	7	
Eye "		2		—	129
Dental "		7	Operations		8
Local infections		29	Blood transfusions		2
Vaccination		2			
Total		687			

The corrective classes under Mr. Don. Barton have 93 regular men enrolled, and during the year there were 72 other occasional enrolments. These were men temporarily unfit for the regular physical training classes, and also those taking special work for the correction of such defects as round shoulders, flat feet and spinal curvature.

(18) REPORT OF MEDICAL ADVISER OF WOMEN

(*Dr. Edith Gordon*)

II.

I beg to present for your consideration the report of the Medical Adviser for Women for the year 1932-1933.

The work of the year 1932-1933 has not been marked by any outstanding developments, rather has it been one of marking time. It would seem that the maximum development under present conditions had been reached. Each day has brought its own problems, and each week has seen a large number of women students served by the medical office. The health of the women has been excellent on the whole, and there has been less illness than usual reported to the office. The physical condition of the entering students was outstandingly good.

Physical Examinations.—There have been 666 physical examinations during the year. Of these, 228 have been upon entering students of University College, the Faculties of Medicine, Household Science and Architecture, who are required to take two hours weekly of physical training. The remaining 438 were upon women of other years, colleges and departments. There were 70 re-examinations during the year upon students whose condition at the first examination was such that a check was considered advisable later. There were 110 special examina-

tions on students who were participating in one of the various sports. Many students come back yearly for a physical examination; 120 have had a second examination; 42 a third; 31 a fourth; and 16 a fifth. The medical adviser is anxious to cultivate the annual physical examination habit among the women students. It is interesting to note that frequently there is improvement in the physical condition of the student between one examination and the next. The value of individual health education through physical examinations can thus be shown. The number of correctable defects found on examination of the entering students continues to be large. Better health education is certainly needed in the secondary schools.

Consultations.—The students are using the consultation service in increasing numbers. It is estimated that in the neighborhood of 2500 calls by students have been made on the Medical Office for consultations regarding health problems, or for treatments of a minor character. It is gratifying to note the appreciation of the students for such services, and the splendid cooperation that is given to the medical adviser. The value of the office for this purpose is recognised among the women of all the faculties and departments. Students from every year, and of every faculty and department find their way to the medical office to ask advice. It has been the aim of the medical adviser to give as little treatment as possible, and to have the students recognise the office as a place to which they may bring health problems and receive advice, rather than an office for treatment. There are many cases, however, of minor ailments and incipient illness that the medical adviser treats. This is to prevent further development of disease, and to make possible assistance that would not be sought elsewhere. Wherever there is a definite disease process, or symptoms calling for skilled interpretation or lengthy treatment, the student is advised to seek her own physician, or to consult with a reputable doctor. Vaccinations are performed on the unvaccinated students, thus enabling them to meet the requirement of the Board of Governors regarding vaccination. In 1932-33 there were 36 vaccinations. Conscientious objectors to vaccination report monthly to the medical office. Shick, Dick and Tuberculin tests are performed when the circumstances indicate that information from such tests would be of value. Urinalyses are done when the case requires it. It would be of value and interest to have more laboratory work, and so complete the physical examinations, but time and equipment are lacking.

Lectures.—Three health talks, based on the findings at the physical examinations were given to the entering students. Four hours weekly in anatomy were given to the students in the second year of the course leading to a diploma in physical education, and one hour weekly to the first year students of the same course. Four lectures in personal hygiene were given to the students in the Public Health Nursing course.

Rest Room.—As an alternative for the physical training requirement in the case of certain students physically unfitted to do the gymnasium work, rest periods were required. This served two purposes: it gave the student an appreciation of the value of occasional brief rest periods for conserving energy; and gave the medical adviser an opportunity to watch certain students more closely. The rest room also served a large number of students who came for occasional hours in a day full of many and demanding duties.

Anthropometry.—One room in the medical office has been equipped for work in anthropometry. Two women students devoted one day a week to work there under the direction of the department of anatomy. This work gives added meaning to the uses to which the medical office can be put. Data upon normal young women should prove of value and interest, and it is sincerely to be hoped that some research problem may continue to go forward there.

Needs.—An infirmary for the students who are not cared for by the infirmaries in the women's residences is very badly needed. The problem of providing proper care for women ill in boarding and rooming houses needs immediate

solution. We have so far been fortunate in avoiding serious incidents, but much unnecessary suffering has been endured by some students.

The present quarters of the medical adviser are adequate and satisfactory under present conditions, with the limited number of physical examinations now required of the women students. With an increase in numbers; or an increase in the physical training requirements from one to two years; or if the other Arts colleges besides University College demanded physical training of their women students, the quarters and staff would be inadequate. It is to be hoped, however, that very shortly the physical training requirement will be the same for the women as for the men.

The needs of the women for proper facilities for gymnasium work cannot be too much stressed. The crowded gymnasium in the Household Science building barely allows the fulfilling of the physical training requirement. It cannot at all meet the needs of the many women from years other than the first, and from colleges other than University College in the matter of sports. Nearly all the basketball and baseball teams have to find practice floors in places outside the University. If it were not for the gymnasium at the Ontario College of Education which is available at certain hours, the women would almost have to give up sports, the difficulties are so insurmountable. The corrective work which should be such an important part of the required physical training work, has had to be greatly curtailed because of the lack of sufficient space, and only the more acute needs along that line can be met.

It would seem that the women's athletic centre cannot be much longer delayed. It is to be hoped that the coming year may see something definite done in regard to it.

Physical Examinations, 1932-1933:

University College (entering)	195
University College (other)	82
Victoria College	45
Trinity College	38
St. Michael's College	18
Household Science (entering)	22
Household Science (other)	18
Medicine (entering)	11
Medicine (other)	14
Applied Science and Architecture	4
College of Education	137
Public Health Nursing and Administration	48
Social Science	9
Occupational Therapy	4
Physiotherapy	2
Music	3
Graduate	12
Special and Occasional	4
Total	666
Number required to take physical training	228
A1 and A2 (physically fit to participate in physical training)	86.8%
B1 (requiring corrective gymnastics)	5.7%
B2 and C (unfit to participate in physical training)	7.5%

(18) REPORT ON ATHLETICS AND PHYSICAL TRAINING

(*T. A. Reed, Secretary, Athletic Association*)

III.

Compulsory Physical Training

The number of men students registered under this heading shows approximately the same number as in the previous year. An endeavour was made to provide more interesting floor work for those who, having no special bent, are obliged to take their work in the gymnasium. To this end, Mr. W. H. Martin

of our gymnasium staff voluntarily visited Ollerup, Denmark, and took a special course in Danish fundamental gymnastics under Mr. Niels Bukh, principal of the People's College. Some of this work was introduced in the regular classes with excellent results, the students showing a greatly increased interest in the work and deriving marked benefit from this type of Physical Training. It is intended next year to extend this work so that the second year men may take more advanced exercises.

The following schedule shows that of the 1662 students, nearly 400 obtained their standing by voluntary participation in competitive sports.

Men students enrolled in the first and second years		1,882
From third and fourth years (being deficient in previous years		43
From Wycliffe College		13
		1,938
Deduct those with credit for two years physical training but repeating academic work	215	
Deduct those exempted on medical grounds	34	
Withdrawn from college during the session	27	
		276
		1,662

These 1,662 elected to take their physical training as follows:

In Physical Training classes	1,185
In the Canadian Officers' Training Corps	257
In the corrective classes	93
In the following Intercollegiate & Interfaculty sports (part time):	
Football	158
Soccer	48
Track	37
Harrier	16
English Rugby	15
Basketball	112
Hockey	113
Indoor Baseball	107
Boxing, Wrestling and Fencing	81
Swimming and Water Polo	91
Gymnastics	24
Lacrosse	42
Volley Ball	25
Failed to register in Physical Training	40
	2,444
Less those in two or more activities	782
	1,662

General Physical Training.—Under the supervision of Mr. Donald M. Barton, the chief instructor, and his assistants Mr. J. E. McCutcheon, Mr. W. H. Martin and Mr. W. W. Winterburn, the work of the department was efficiently carried out. The compulsory physical training, dealt with in the previous paragraph, required 46 weekly periods with a total of 981 classes. Part of these were devoted to special corrective work for 165 men found deficient upon medical examination, viz.: 22 periods a week amounting in all to 448 classes. For the various branches of athletics for men of all years, the following were enrolled for the session.

	Enrolled	Weekly Periods	Total Classes Held
Boxing	110	7	104
Fencing	93	4	94
Wrestling	98	7	111
Gymnastics	42	2	60
Track & Field	78	5	70
Interfaculty Water Polo	146	20	80

Intercollegiate Water Polo	25	9	26
Interfaculty Swimming	58	16	54
Intercollegiate Swimming	38	3	20
Basketball	278	45	885
Indoor Baseball	275	20	260
Lacrosse	154	12	75
Learn-to-Swim	141	13	274
Life Saving	300	21	391
Volley Ball	76	15	50

A new form of competitive athletics, volley ball, has been added this year in the Interfaculty series which, together with the indoor lacrosse instituted last year, provides an outlet for the athletic activities of over 200 students.

Special mention must again be made to the work carried on by the Royal Life Saving Society, the University of Toronto again ranking first among Canadian institutions, the students obtaining 172 of the awards granted by that society. 139 students were taught to swim.

Intercollegiate Athletics.—Honours were evenly divided between McGill University and University of Toronto in the Senior Intercollegiate championships held during the year. University of Toronto won the much coveted Yates Trophy for senior rugby, the soccer, golf, rowing, boxing, wrestling and fencing, water polo and gymnastics, both team and individual. We won back the Jimmie Douglas Memorial Cup for junior rugby and the intermediate tennis. McGill again captured the Tait Mackenzie Trophy for senior track, the English rugby, senior hockey, senior basketball and swimming and diving, which last was so evenly divided that only a fraction of a point separated McGill and Toronto.

Our senior hockey team was again entered in the senior series of the Ontario Hockey Association and the senior basketball team in the "Big Five" City Group. This latter team won the city championship after a brilliant series. The senior hockey team made its annual visit to the United States and won its games against Harvard, Yale and Princeton.

Altogether 24 teams represented the University, making in round numbers 319 contestants who wore the colours of the University. Of these 31 took part in more than one activity.

Interfaculty Athletics.—Competition between the colleges and faculties as usual played a very important part in our activities, there being 968 men turn out to compete for the various trophies now in the possession of the University. 733 of these men participated in more than one branch of athletics.

Series	Inter-collegiate teams	Players	Inter-faculty teams	Players	Total
Rugby	3	90	10	266	356
Track	2	43		68	111
Soccer	1	14	9	132	146
Harrier	2	11		75	86
Hockey	3	45	15	177	222
Basketball	3	36	19	244	280
Lacrosse			10	107	107
B.W. & F.	2	32		67	99
Indoor Baseball			16	222	222
Swimming	1	19	7	53	72
Water Polo	2	19	10	118	137
English Rugby	1	18			18
Tennis	2	10		70	80
Golf	1	6			6
Gymnastics	1	7		12	19
Indoor Track				22	22
Volley Ball			5	68	68
	24	350	101	1701	2051
Less those in two or more activities		31		733	764
Number of contestants		319		968	1287

The Athletic Directorate.—The Athletic Directorate for 1932-33 consisted of Dr. J. A. McCollum (President), Professor M. A. Mackenzie, Professor J. F. Macdonald, Dr. W. Easson Brown, Messrs. F. A. Fell, J. R. Fitzpatrick (Vice-President), J. D. McLennan, W. O. Twaits, H. A. Williams, J. W. Graham and, ex-officio, Dr. G. D. Porter, Medical Director, Warren Stevens, Athletic Director and T. A. Reed, Financial Secretary.

The wisdom of the Board of Governors in appointing a permanent athletic director, Mr. Warren Stevens, B.A.Sc., has been justified in a marked degree in the year just coming to a close. Mr. Stevens' ability in football and basketball and his all round experience in athletics generally, has been of the greatest benefit to both the staff and the student body, and the same experience is enabling the Directorate to solve problems which have arisen from time to time.

Professor M. A. Mackenzie who, for sixteen years has been President of the Athletic Directorate, this year retired from the presidency although retaining his seat on the Board. Dr. J. A. McCollum, a distinguished graduate of the University and prominent in athletics in the past, was unanimously elected president in his stead.

(18) REPORT OF PHYSICAL EDUCATION FOR WOMEN STUDENTS

(*I. G. Coventry, Director of Physical Education*)

IV.

During the session 1932-33 there were 252 students enrolled in the physical education classes and approximately 836 class periods of instruction were given by the physical director and her assistant.

Compulsory Physical Training.—The required physical training class with an enrolment of 212 students was subdivided into 15 class periods a week. All the students who attended regularly the two class periods a week during the year tried the final practical examinations in general gymnastics and corrective exercises. A written report of the results of these examinations was sent to the Registrar and it is satisfying to state that a very small percentage failed to obtain the required standing.

The students from University College	numbered.....	203
" " " Trinity "	"	0
" " " St. Michael's "	"	4
" " " Victoria "	"	25
" " " Faculty of Medicine	"	11
" " " " " Applied Science	"	2
" " " " " Household Science	"	7

Corrective and Remedial Classes.—Additional class periods of corrective and remedial gymnastics were given to students who were medically advised to take the special course arranged for their welfare. This essential part of physical training was under personal supervision and was conducted in a small room at 44 Hoskin Ave. Marked improvement in physical disabilities was noted and reported at the end of the session.

Diploma in Physical Education—Four Year Course.—There were 21 students registered in the four year course in physical education. The students attended regularly the six required periods of practice and theory throughout the session.

An interesting and gratifying feature in connection with the course is the fact that the women graduates who have been granted diplomas in physical education are in constant demand as full time physical directors in collegiates, technical and high schools in Toronto and other cities of Ontario.

Students in the first year class	numbered.....	7
" " second " " "	.....	5
" " third " " "	.....	6
" " fourth " " "	.....	3

Swimming and Life Saving.—There were 301 students from all colleges, faculties and departments and 482 class periods of instruction were given during the session of seven months.

Students from University College	numbered	105
" " Trinity "	"	15
" " St. Michael's "	"	7
" " Victoria "	"	93
" " Faculty of Medicine	"	10
" " " " Household Science	"	8
Department of Public Health		23
Administrative Staff		36
Hospital Administrative		4

(18) REPORT ON ATHLETICS FOR WOMEN

(*Miss A. E. M. Parkes, Secretary Women's Athletic Association*)

V.

The activities of the Women's Athletic Association include the encouragement and direction of competition in six sports—basketball, hockey, swimming, tennis, indoor baseball and badminton. All athletics, with the exception of hockey, are carried on with considerable difficulty, due to the inadequate facilities available, and this discourages many students from participating. Two types of competition are provided—the intercollegiate, which includes the privilege of intercourse with students of other universities and affords the best possible competition for the outstanding athletes, and the interfaculty and faculty, in which as many students as possible may participate.

In the year 1932-33, the tennis championship was won by Queen's, the basketball by McGill, and the hockey by Toronto. Swimming, baseball, and badminton are not yet included in intercollegiate activities. In the interfaculty series, the record is as follows:

Series	Cup	Winner	Competitors	
Tennis	Curlette Cup	St. Hilda's	36	(6 teams)
	Univ. Champion	Agnes Gardner St. M's. I		
Basketball	St. Hilda's Cup	Sr. Victoria	120	(11 teams)
Baseball	Univ. College Cup	Victoria	35	(3 teams)
Hockey	Harston Cup	St. Hilda's	40	(4 teams)
Swimming	Interfaculty Cup	Univ. College	40	(6 teams)
	Robertson Cup	Elizabeth Edwards	30	
	Univ. Champion	U.C. IV		
	Cochrane Cup	Ann Ord	15	
	Diving Champion	Trin. IV		

There were also six individual faculty tennis tournaments and four swimming meets, the intercollegiate hockey team competed in the City Series, and the intercollegiate and intermediate basketball teams played several exhibition games with outside teams.

In order to finance the association, the undergraduates have for several years operated parking stations during the football games. The Superintendent of Grounds made possible the success of this undertaking by his kind permission for the use of unoccupied university ground and his cooperation throughout the season.

No report of women's athletic activities in the university would be complete without mention of the generosity of the men's Athletic Directorate with regard to the use of the Arena, the Hart House pool and gymnasium, and in financial matters.

The Athletic Directorate for 1932-33 consisted of: Professor C. C. Benson, President, Mrs. W. A. Kirkwood, Dr. Edith Gordon, Miss I. G. Coventry, Mrs. W. B. Elsley, Miss Adele Statten and Miss A. E. M. Parkes, Financial Secretary, as faculty and graduate representatives, and the Misses Elizabeth Carter, Elizabeth Edwards, Jessie Gray, Beatrice Longley, Audrey Purkis and Margot Thompson, as undergraduate representatives.

(19) REPORT OF THE WARDEN OF HART HOUSE

(J. B. Bickersteth, Esq., M.C., M.A.)

General.—Hart House has had a successful year. In September there was considerable uncertainty as to whether the difficult economic conditions of the country would result in decreased registration and thus affect the revenue of Hart House which, having no endowment, depends in large measure on the fees of its members. In actual fact the undergraduate membership was four thousand one hundred and nine and the senior membership was eight hundred and twenty making a total membership of four thousand nine hundred and twenty-nine as against four thousand nine hundred and twenty-seven last year.

It was only to be expected that the wide-spread financial embarrassment of the undergraduates would bring a marked decrease in the number of meals served in the Great Hall. In spite of the moderate prices already in force the Hall Committee recommended that the 25c. and 35c. luncheons should be reduced to 20c. and 30c. respectively and the 35c. dinner at night to 30c. These reductions were approved by the Board of Stewards and came into force at the end of November. There was an immediate increase in the number of men using the Great Hall. After consultation with the House Committee of the Faculty Union and the Graduate Committee of Hart House reductions in the price of meals served to senior members were also arranged and came into operation during December. Faced with falling revenue and the constant need for the most rigid economy Mr. J. A. Bartholomew, Superintendent of the Great Hall since May 1932, has performed his duties with great ability and efficiency. During March the Governor-General lunched with the undergraduate members of the Board of Stewards and of the Hall Committee at the High Table in the Great Hall.

During the Christmas vacation the American Historical Association met in the University. The delegates used the common-rooms in Hart House and meals were served in the Great Hall. Throughout this period and during the first few days of term in January an exhibition of outstanding interest consisting of pictures, manuscripts, maps and other articles of historical value from the Dominion Archives at Ottawa was on display in the east common-room. This exhibition which was guarded night and day by members of the Royal Canadian Mounted Police was visited not only by the delegates but also when term began by hundreds of undergraduates and special arrangements were made for the general public to enter Hart House during the last week it was on view.

During the spring and early summer the quarters controlled by the Camera Committee were enlarged by excavating an area to which access is given by a stairway leading down from the old rooms. The old quarters had long been totally inadequate for the growing number of members interested in photography. These alterations which were carried out under the guidance of Professor A. F. Coventry with the help of the Camera Committee and the assistant comptroller have resulted in the greatly increased usefulness and convenience of these rooms. Half the cost of the work was borne by the Massey Foundation to the Trustees of which Hart House is again under a deep debt of gratitude.

There has been no marked decrease in the number of men using Hart House, though some of the social functions have had smaller attendances, notably the Hart House Fancy Dress Ball. The Warden's Christmas dinner given to those undergraduates who live too far from home to return there for Christmas brought together as on previous occasions men drawn from every province throughout the Dominion, from Australia, New Zealand and South Africa, from the British Isles, from India and the Far East and from many other countries. There is no other function in the year which demonstrates so clearly the cosmopolitan character of the University. The annual elections for Hart House committees which produced even more candidates than in past years took place in March,

the new procedure as regards their management proving most successful. During May the Workers' Educational Association held a dance in Hart House and the Birthday Festival of Toc H also took place there. The library was filled with students at almost any hour of the day and the small loss of books was particularly gratifying.

Art.—The season opened as usual with an exhibition of pictures by the artists of Toronto the idea of which is to give all members and especially freshmen the opportunity of becoming acquainted with the work of the leading painters of the city. Other exhibitions were by Peter Haworth and Mrs. Haworth, F. S. Haines, L. F. Casey, F. H. Brigden, the Group of Seven, W. P. Lawson, Charles Goldhamer, Marion Long, L. A. C. Panton and the students of the Ontario College of Art. In January the annual exhibition of photography by members of Hart House produced work of outstanding merit and comparable with that of any photographic salon in the world. This year for the first time the experiment of holding separate undergraduate and senior exhibitions was tried. That of the undergraduates held in the latter part of February was most encouraging, 140 water-colours, oils, pen and pencil drawings and lino cuts being submitted of which 105 were hung. The exhibition of work by faculty and graduate members held during the last part of March also aroused much enthusiasm. Of the 109 exhibits sent in 92 were placed on the walls or in the show-case. It can safely be said that this experiment, attempted not without some misgiving, proved most successful and augurs well for future exhibitions of a similar kind. With the object of familiarising students with the work of the great masters monthly exhibitions, beginning with the Italian Primitives and reaching (by April) the 17th and 18th Century Flemish painters, were held in the print room under the able guidance of Mr. W. E. Carswell and a group of undergraduates. During the winter Mr. Arthur Lismer gave eight informal lectures illustrated with slides to a group of members interested in studying the appreciation of art and in November Mr. Alec Miller, the well known sculptor in wood and mediaevalist, spoke on "Sculpture in Wood". The collection of books in the sketch room is steadily growing both through purchases and gifts. A series of thirteen art classes were held from early in November until the end of February under the direction of Mr. H. S. Palmer. The Sketch Committee has had under consideration the establishment of a workshop where the arts and crafts such as etching, the making of lino cuts and woodcuts, metal work and modelling could be practised. Here again the difficulty is lack of space. During next winter the committee will continue to consider every possibility in the hope of having some definite plan to put forward by next spring.

Music.—In the spring of 1932 the Music Committee having come to the conclusion that in past years the Friday Afternoon Recitals though individually interesting were totally unrelated to each other decided to work out two series of recitals for the winter of 1932-1933, one before and one after Christmas, each of which should be of a more homogeneous character. Owing to the enthusiastic co-operation of the musicians in Toronto this experiment proved most successful and the recitals drew large attendances, that for instance by Dr. MacMillan who explained and played Bach being so crowded that men were sitting on the floor of the music room. The series before Christmas consisted of six recitals, the purpose of which was to present in chronological order music representative of the various periods from mediaeval times until the present day. The second series was, broadly speaking, an endeavour to present music of rather national types, that is to say, there were individual programmes each of which consisted of Dutch, Italian, English or German music. In addition, in this series there were two lecture demonstrations, one of which was a demonstration of Beethoven's Fifth Symphony and the other Beethoven's Ninth Symphony. Each of these was given shortly before that particular work was to be done by the Toronto Symphony Orchestra. These demonstrations were illustrated by gramophone records and the piano. For next winter the committee is planning one con-

tinuous series and many of the leading musicians have already consented to take part. The Great Hall was filled for each of the eight Sunday Evening Concerts for the success of which Hart House is again indebted to its many friends among the musicians. The Governor-General and the Countess of Bessborough with the Lieutenant-Governor of Ontario and Mrs. Herbert Bruce attended the concert given on 20th November by the choir of the Church of St. Mary Magdalene conducted by Dr. Healey Willan. Mr. Campbell McInnes again directed the series of eight songsters held in the music room on those Sunday evenings when there is no concert in the Great Hall and Mr. Ross Workman was responsible for the sing songs on Fridays at midday.

Debates.—Hon. visitors from the University of Glasgow and the University of Wales took part in the first debate of the year which dealt with the efforts at the recent Ottawa Conference to make the British Empire an economic unit. Three hundred men were present and for this occasion a limited number of women students were admitted to the gallery of the House. At the second debate various alternatives to the present form of government in Canada were discussed and opportunity was given not only to adherents of the traditional parties but also to those extremists of the left and right to express their views. The Hon. Ernest Lapointe was the hon. visitor at the January debate which resulted in a straight party vote and produced the highest standard of speaking for several years past. The annual elections for the Debates Committee took place at the last debate of the year when a resolution stating "that in the opinion of this House Ottawa is nearer to Washington than to London" was warmly discussed. During the course of the year it became evident that the rules of procedure first drafted in June 1924 and revised in October 1928 needed further revision especially with respect to the powers of the Speaker and the Debates Committee have taken this work in hand.

Student Christian Association.—The Student Christian Association, the chief object of which is to develop the religious life of the students, has never been more alive. It is estimated that this year approximately 1000 men were interested in some phase or other of the S.C.A. and three hundred men were enrolled in the various study groups many of which are held in Hart House. On the third Sunday in the month throughout the year Holy Communion was celebrated in the Chapel. A series of lectures was held in the music room in November the general subject of which was "The relevance of Christianity to modern problems". During Lent the Rev. W. Lyndon Smith gave four midday addresses in the Chapel. In December the Oxford Group Movement made its first appearance in Toronto. It exercised no very profound influence on the university, though indirectly its influence was seen in the decision of the S.C.A. to hold a Lenten mission. This mission was conducted throughout one week by Dr. Richard Roberts and unquestionably did much to deepen the spiritual life of the large number of students who attended it. The work of the S.C.A. is entirely dependent on private contributions from students, faculty, graduates and other friends. It is satisfactory to be able to state that in spite of the difficult times the entire budget was raised. In March the men's cabinet and the women's council after much consideration recommended to the Advisory Board that the name be changed from the Student Christian Association to the Student Christian Movement. The Board approved of this change. The Rev. L. A. Dixon has endeared himself to all who come in contact with him in Hart House and they are many. It is owing to his wise judgment and devoted work that the S.C.M. is becoming a real force in the University.

Theatre.—Although the number of Hart House plays was smaller than usual this year the theatre has been in constant use. The Victoria College Dramatic Club produced "The Tragedy of Nan" and the Music Club of the same college "H.M.S. Pinafore". The Trinity College Dramatic Society presented "The Beaux Stratagem". Performances were also given by the University College French Club, the University College Alumnae, the Medical students and other

university organisations. "Julius Caesar" was very successfully produced in October by Mr. Edgar Stone, the Director of Hart House Theatre, the Saturday evening performance being attended by the Governor-General. The Christmas play, also produced by the Director, was "Peter Pan". At the end of May a Revue was given for three nights. The Hart House String Quartet held its usual series of concerts in the theatre on Saturday evenings. Five productions were presented by the Hart House Children's Players and in connection with the meetings of the Ontario Educational Association a dramatic evening was arranged by the secondary schools of Toronto as a demonstration. This summer a course in acting and stagecraft is arranged to take place in the theatre during July and part of August when students will be given an opportunity of studying acting, lighting, costuming, scenery and properties and every important feature connected with the technique of the stage.

Visitors.—Among the many visitors to Hart House during the past year have been Sir Francis Wylie (for many years Oxford secretary to the Rhodes Trustees), Dr. Inazo Nitobe (member of the Japanese House of Peers), Sir Philip Cunliffe-Lister (Secretary of State for the Colonies), the English Public School boys with Lt.-Col. J. Hills and Lord Nigel Douglas-Hamilton, Mr. Patrick Hodgson, Professor A. N. Whitehead, Sir James Irvine (of St. Andrew's University), John Drinkwater, John Goss, Dom Anselm Hughes, Professor E. Balogh (the well known German lawyer), Clemence Dane, Canon L. W. Grensted (Professor of the Psychology of the Christian Religion at Oxford), M. Charles Arsene Henry (Minister of France to Canada), Professor Charles A. Beard (the well known American historian), the Marquess of Zetland, John Masefield, Jacques Maritain (the distinguished mediaevalist and philosopher), Clarence Darrow (the American lawyer), Dr. R. S. Wallace (Vice-Chancellor of the University of Sydney), Richard B. Harrison (of "The Green Pastures"), Professor R. Coupland, Major Gladstone Murray (of the British Broadcasting Corporation), Sir Arthur Salter (the noted economist), Rupert Harvey (the judge at the Canadian Drama League Festival at Ottawa), Dr. H. A. Garfield (President of Williams College), Dr. Rush Rhees (President of the University of Rochester), Carlton Stanley (President of Dalhousie University) and the Very Rev. Gilles Marchand (Rector of the University of Ottawa).

The Committees.—The daily life of Hart House, so varied and far-reaching in its interests, could not exist without the active co-operation of its various committees. The dinner held every October to which the one hundred and thirty-five members serving on the committees for the current year are invited brings together this important body of men. These committees meet in the Warden's office at regular intervals throughout the year and deal with the problems, present and future, of that department of Hart House which is their special concern. Several of them, such as the Music and Sketch Committees, are called on to devote considerable time during the week to concerts, recitals and exhibitions. Those undergraduates who have had some experience in the work of standing or special committees would be the first to admit how great is the debt of gratitude which Hart House owes to the faculty and graduate members who serve with them. These senior members bring wise judgment and practical assistance to the affairs of Hart House and they do this often at considerable sacrifice of their leisure. This is particularly true of the Board of Stewards and the Finance Committee. It is impossible to exaggerate the contribution which men like Professor H. Wasteneys, Professor M. A. Mackenzie and Dr. V. E. Henderson have made to Hart House over a long course of years.

Administrative Staff.—To the Comptroller of Hart House (Mr. J. R. Gilley) and the Assistant Comptroller (Mr. W. R. Cowan) who during the past few years have been called upon to administer Hart House in the face of considerable financial difficulties, the members as a whole are deeply indebted. To the efficiency and loyalty of these and other members of the staff the Warden desires to pay his sincere tribute.

(20) REPORT OF THE DIRECTOR OF THE CONNAUGHT LABORATORIES

(J. G. FitzGerald, M.D., LL.D.)

In this the nineteenth report of the Director of the Connaught Laboratories, the usual survey of some of the more outstanding activities of the laboratories for the period ending June 30th, is undertaken.

First, brief reference must be made to the fact that the northerly addition to the hygiene building was completed in December last. This very substantial extension was built with funds provided from reserves of the Connaught Laboratories. The total cost, including furnishings, will exceed three hundred and fifty thousand dollars. Both building and equipment have elicited the greatest commendation from a large number of visitors from other universities and scientific institutes. They are a source of pride to all those responsible for them. The architects Messrs. Mathers and Haldenby who designed the building, Mr. A. D. LePan, the Superintendent of grounds and buildings, and his associates, who carried a large share of the burden of supervision, and Mr. Andrew Hazeland who also served in a supervisory capacity in the installation of equipment, are entitled to the warmest thanks and heartiest congratulations upon the completion of their tasks. These I beg now to extend to them. My colleagues, the senior administrative officers of the laboratories, also contributed largely to the successful completion of the project which had as its aim and purpose the satisfactory housing of a combined school of hygiene and serum institute. Elsewhere, no similar unit is included in any university organisation. Hence many problems and complexities arose which were both unusual and novel. The building now occupied by the School of Hygiene and the University Section of the Connaught Laboratories, has been completed at a cost of over seven hundred thousand dollars, which sum has been provided entirely by the Rockefeller Foundation and the Connaught Laboratories. The cost of furnishings and equipment has also been defrayed by the same organisations. University funds proper have not been drawn upon at all for financial assistance. Now, after more than seven years, this building project which was conceived in 1924 is finally completed.

The year under review, 1932-33, has been exceedingly active from the point of view of research and investigation. As always, this primary function of the Connaught Laboratories has never under any circumstances been subordinated to other undertakings however pressing they appeared at the moment. This is the one indispensable factor, without which continued growth of these laboratories would be impossible. The spirit of enquiry must permeate and pervade all sections of the laboratories. Otherwise decline must inevitably set in. This fact was recognised and stipulated in the deed of gift of the University Farm and Connaught Laboratories. The scope and character of the investigations which engaged the attention of members of the staff can be here, only referred to. In general the following fields have been explored, namely:—bacteriology, serology, epidemiology, vital statistics, physiology and physiological hygiene, biochemistry and immunochemistry. In addition, certain clinical studies have been carried on in the Hospital for Sick Children and elsewhere by two or three staff members. Without elaborating in detail the nature of the above researches, brief reference may be made to some of them. The director in collaboration with Dr. M. H. Brown has continued the investigation of the immunological significance of the complex carbohydrates which Professor Harold Hibbert of McGill University has very kindly furnished. Doctor R. D. Defries has been very active in the direction and supervision of studies of the material obtained by the Department of Health and Public Welfare of the Province of Manitoba in a questionnaire investigation of the causes of maternal mortality in that Province. The facilities available in this University for such cooperative enterprises are of national importance.

Reference was made in the report of last year to the exceedingly important work carried on by Doctor James Craigie and his collaborators in the filterable-virus section of the laboratories under Doctor Defries' immediate supervision. This has been continued and extended. Striking progress has been made and substantial contributions to knowledge of this immensely important group of living agents, have resulted. It is widely believed at the moment that no branch of microbiology is more vitally in need of extensive and thorough enquiry than that aspect which relates to the filterable viruses. In this field Doctor N. E. McKinnon has continued work on the virus of anterior poliomyelitis. Co-operation with the Department of Health, Ontario, in the assay of convalescent serum has been continued. Mention may here be made of the collaboration of the Connaught Laboratories in making available specimens of human serum for neutralisation studies in the yellow-fever virus investigations of the International Health Division of the Rockefeller Foundation.

Doctor Donald Fraser has in collaboration with Doctor McKinnon and Doctor Moloney practically completed his exceedingly interesting and important studies of Schick-test toxins, preliminary results of which were presented to the Conference of Experts convened by the Health Organisation of the League of Nations in London in June, 1931. Doctor Fraser, Doctor Mader and Miss Halpern have made further progress in their interesting explorations of diphtheria immunity in mothers and infants. Doctor Frieda Fraser and Miss Plummer have added still further to the information already acquired in their studies of haemolytic streptococci. Doctor Moloney, Doctor Taylor, Miss Smith and Mr. Orr have all made interesting observations in the field of chemistry in relation to immunity. A much clearer understanding of important fundamental reactions of toxins and antitoxins both *in vivo* and *in vitro* is likely to result from these and similar activities.

Doctor M. H. Brown has been associated with Doctor Brink and others in the Department of Health, Ontario, in a very comprehensive study of tuberculin and the tuberculin reaction in a large group of patients in Ontario hospitals. Miss Elizabeth Anderson with Doctor Brown has obtained important results in studies of strains of pneumococci harboured by normal persons and in the study of certain aspects of their immunity thereto. Miss Mary Ross has continued her statistical studies of tuberculosis mortality and of the morbidity from certain communicable diseases reported in the Province of Ontario for many years past. Reference has previously been made to Doctor Dolman's highly important studies of local staphylococcic infections and his preparation of potent staphylococcus exotoxin and staphylococcus toxoid and antitoxin. This work he has continued and exceedingly promising clinical results have followed the use of staphylococcus toxoid in a variety of clinical conditions in man. He has established the fact that the antihaemolytic titre of human serum can be heightened greatly by injections of appropriate doses at suitable intervals of this new antigen. These advances give promise of being of great value from the viewpoint of prophylaxis and treatment. Tetanus toxoid has been prepared by Doctor P. A. T. Sneath in the Farm Section of the laboratories and active human immunity to tetanus has followed its employment. It has been proven also to be completely innocuous. Doctor Charles Siebenmann has developed a very interesting and highly ingenious method for measuring total solids. He has also continued his interesting work on concentration of diphtheria toxoid and the concentration of diphtheria antitoxin of very low potency with gratifying results. Doctor Donald Cameron has in his conduct of the work of diphtheria-toxoid production at the University Farm, encountered very interesting problems which had not been quite as clearly brought into focus previously. Doctor Gibbons has completed a highly creditable study of smooth and rough strains of Sonne dysentery bacilli. He has also been engaged with the technical assistance of Mr. William Parkinson in a motion-picture study of bacterial growth and development. Doctor Silverthorne has made further progress in his meningococcic

meningitis and whooping-cough investigations. In physiology and physiological hygiene, Doctor Best, Doctor MacLean, Doctor McHenry, Doctor Ruth Partridge and Mr. Solandt have all been exceedingly active and productive during the period under review. Doctor Best and his collaborators have made important advances in studies of fat metabolism. The enzyme histaminase first described by Doctor Best and co-workers has also been a fruitful subject of further work. Doctor Partridge and Doctor MacLean have carried out field studies of defects in auditory acuity in school children; and of ventilatory conditions in various places; and Doctor MacLean has again been responsible for the organisation of the examinations of members of the staff who constitute the group being studied in the ascertainment of the boundaries of the normal in the assessment of physical fitness. Doctor Scott has made important advances in methods of recovery and purification of the substance heparin. Doctor Scott with Mr. Fisher has completed interesting work on crystalline Insulin. Doctor Arthur Charles has collaborated with Doctor Scott in various biochemical investigations. The important problem of atmospheric pollution has received attention and Doctor J. G. Cunningham and Doctor Barrett have with Doctor Best's cooperation made surveys of existing conditions in and about Toronto. They have in progress, also, experiments to ascertain if possible, under controlled conditions the effect on the health of animals of unfavourable environmental conditions of that character.

The complete list of publications, for the year, of members of the staff of these laboratories and of the School of Hygiene, will be found elsewhere in this volume included in report (13), publications.

The library service in the Connaught Laboratories has been greatly handicapped heretofore because of limited accommodation. With the completion of building extensions and alterations this difficulty has been entirely overcome. A large room has been made available for current journals and as a work-room, and the original library-room conserved for the purpose of housing bound volumes of periodicals and as a work-room where they may be consulted. Miss Somerville and Miss Pichler have been most cooperative and helpful in making fully available the resources of the library and in translation service. The number of bound volumes has been increased somewhat and the current journals have been continued. The library has been open to all members of the staffs of the laboratories, of the School of Hygiene and to graduate and undergraduates in this University. Its maintenance and extension is provided for by the Connaught Laboratories.

The staff of the Comptroller's Office has been increased by the addition of an accountant and office manager. Mr. K. E. Allen, a graduate of this University has joined the laboratories in the above capacities and has already rendered substantial and valuable service. Mr. Hutchison and his staff have, as in the past, most efficiently cooperated in the conduct of administrative problems relating to routine production and made possible the coordination of interrelated scientific and production problems of great importance not only to these laboratories but to the country at large. Miss Hilda Finegan a member of the administrative staff in the Comptroller's office for many years past whose service has been singularly devoted and most valuable, has been made Secretary to the Farm Section. The staff of the laboratories now numbers 155 persons.

The routine production and distribution of biological products has again been very large in volume. The products prepared and supplied include:— diphtheria antitoxin, tetanus antitoxin, scarlet-fever antitoxin, perfringens (gas-gangrene) antitoxin, anti-meningococcus serum, concentrated anti-pneumococcus sera, normal horse serum, diphtheria toxoid, Schick-test outfits, scarlet-fever toxins, staphylococcus toxoid, pertussis vaccine, smallpox vaccine, typhoid vaccines, rabies vaccine, tuberculin, liver extracts and Insulin. These products of the laboratories have been distributed during this year in the following countries:—Bermuda, British West Indies (Barbados, Jamaica, St. Christopher-Nevis, St. Lucia, St. Vincent, Trinidad, etcetera), British Guiana, British Honduras,

Chile, Irish Free State, Japan, Newfoundland, Roumania, South Africa and Sweden; and in all the provinces in Canada.

We have again been privileged to receive visitors from various parts of the world. They have come during this year from: Australia, Brazil, Ceylon, China, Czechoslovakia, Dutch East Indies, Egypt, England, Sicily, the United States of America and from practically all of the provinces in this Dominion.

Many groups of students, graduate and undergraduate from the faculties of medicine, arts, etcetera, and from the School of Nursing have made observational visits to all sections of these laboratories.

Connaught Laboratories fellowships in public health have been granted to medical graduates nominated by the executive officer of provincial departments of health. These fellowships to the number of 19 have already been awarded since their establishment. They are of prime importance in enabling highly desirable recruits in the public health field to obtain the necessary special training in all branches of preventive medicine.

The director begs to acknowledge with deep appreciation and gratitude the continued support, cooperation and assistance of the Chairman of the Connaught Laboratories Committee of the Governors, Colonel A. E. Gooderham, and his associates on that committee.

It is a pleasure also to acknowledge at this time the devoted service rendered at all times by those engaged in Connaught Laboratories duties.

(21) STATEMENT REGARDING THE MUSEUM OF ARCHAEOLOGY

(Professor C. T. Currelly)

For the first six months of the academic year 1932-33, all the collections of the Museum of Archaeology were in storage and the offices temporarily situated in the new wing while renovations were made in the old Museum building. The alteration of the windows and the repainting of the walls with buff and light grey have made a very great improvement in the lighting of the galleries, and the altering of partitions to give smaller galleries makes possible a more clear-cut division of subjects.

Moving the collections back to the west wing was begun the middle of January and completed without any serious damage, in spite of the fact that numerous workmen were still present in the galleries, which were not completely finished for several months. This held back to a certain extent the work of re-arranging the collections and created a problem of guarding them adequately.

On February 10th, the six galleries of the Greek collection were opened to the public; on March 9th, the armour room and the Chinese tomb court; and on May 3rd, eleven galleries of prehistoric, Egyptian, Babylonian, Roman and Palestinian antiquities. At the end of June, four galleries of textiles and costumes were almost ready for opening, and a great deal of work had been done on the west wing first floor, the third floor, and the anthropological galleries on the ground floor.

In May 1933 an Order-in-Council was passed authorising the distribution of the contents of the Provincial Museum in accordance with the reports of a special committee appointed to advise the government in this matter. The Royal Ontario Museum of Archaeology was instructed to take over the archaeological collections, and the transfer of them began on June 5th. The largest item consisted of over one hundred cases of archaeological specimens from Ontario, together with drawers, boxes and cabinets of similar material from storage; this extensive collection, unequalled of its kind, had been built up by Dr. David Boyle and extended by his successor, the late Dr. R. B. Orr. From Ontario, also, were costumes, baskets and pottery, as well as three hundred skulls. Most of the specimens had to be wrapped and packed, with careful study of the pertinent

labels to insure that no data were lost. The ethnological specimens included good series from British Columbia, Africa, Australia, the South Pacific, South and Central America. Mention might be made of a few of the larger pieces, including four canoes, two house posts and a series of food bowls and blankets. A number of guns and other weapons was included, as well as extensive sets of plaster medallions. On the whole, the material on display was found to be in good condition, whereas objects stored in the attic or basement had been badly damaged by dirt, rats and insects. The Museum took over a large library, chiefly of periodicals. In all, twenty-two truckloads of specimens were moved, probably totalling about fifty thousand pieces. In spite of several delays, the work was virtually completed before the end of June.

The incorporation of these huge collections will necessarily be a slow process, requiring many new cases. It is hoped to display a few cases as soon as possible, the remainder being reserved for later consideration.

Owing to decrease in income, acquisitions by purchase were few in number. Very important among them were twenty-one weapons, mostly of the 16th century and from well-known collections; each piece was very carefully chosen to fill a serious gap in the arms and armour collection. The Japanese section obtained thirty-two 18th century stencils, examples of very beautiful design, and two exquisite screens painted by Sesshiu, 1420-1506, which are the most outstanding addition to the Japanese collection for several years past.

Of the gifts presented by forty-eight donors, space allows mention only of the following, which are specially interesting in relation to other exhibits: three coliths from the Cromer beds, from Dr. A. P. Coleman; two large, painted pottery jars from Tel-el-Amarna, from the British Museum; an Italian, early 16th century brigandine, a rare type of mail for which the Museum has been eager for years, from the Estate of Colonel R. W. Leonard; a large number of objects of bronze, jade, glass, etc. from a group of Chinese royal tombs of the 4th century B.C., from Bishop W. C. White; a collection of Korean potsherds, from Mr. Langdon Warner; seventeen pieces of Delft, from Mr. Bernard Allen; a collection of lustred pottery, from Mr. Charles A. Shearson; a Sèvres porcelain plate, from the Estate of Mr. W. B. Tindall; twenty-five pieces of Mintons porcelain in various stages to illustrate the manufacture, from Mintons Ltd.; an architectural model, "The Monastery by the River", from Mr. A. McK. Brydon; eight Indian shawls, from Sir Michael Sadler; an embroidered and quilted satin petticoat, English, 1747, the bequest of Miss Ann Williamson; important additions to the Currie Collection of African material, from Mr. Sam Harris.

A large number of labels was made for the re-opened galleries; 6,737 objects were entered in the accession catalogue; and 511 drawings were made for the final catalogue. Case-making and mounting went on without interruption. Efforts were made to have the routine work of the Museum suffer no more than could possibly be helped from the necessary concentration on the work of re-arranging the galleries.

Provision by the Museum of Zoology of space and cases in the tower of the new wing enabled us to let the students of the Ontario College of Art and the Technical Schools conduct their museum sketching classes in the usual order, starting in the autumn with the archaeological material. Miss Home gave her talks to the high school students and to other groups partly out of the Museum, and partly in an improvised lecture room in the new wing, where she was able to use a lantern and also objects from the museum collections. Before the end of the academic year, both the lecture room and the theatre were ready for use. Miss Payne resumed her classes for public school children in January, following the opening of the east wing of the Museum at the end of December.

(22) STATEMENT REGARDING THE BIOLOGICAL MUSEUM AND THE ROYAL ONTARIO MUSEUM OF ZOOLOGY

(Professor B. A. Bensley)

In May 1932 the new eastern section of the Royal Ontario Museum became available, affording greatly increased facilities for the exhibition of zoological material, preparation of specimens, storage, re-arrangement of research collections and other activities. Advantage was taken of this situation to transfer the major portion of the collection of the Biological Museum to the new quarters, at the same time effecting a re-arrangement of the Biological Museum more nearly on a teaching basis and setting free space urgently needed for other purposes.

The increased exhibition space made available to the Museum of Zoology on the top floor of the new section of the Royal Ontario Museum has made it possible to arrange both old and newer collections so as to greatly enhance their attractiveness and educational value.

The faunal survey being carried on during the summers by the museum staff has had to be temporarily discontinued. The number of specimens added to the collection through the activities of the staff has therefore been greatly reduced as has also the number the Museum has been able to purchase. It is gratifying to be able to report a continued increase in the number of donations.

The following persons made important contributions to our collections during the past year:

E. V. Rippon, 490 Bloor St. W.—A valuable collection of several thousand foreign molluscan shells.

Mrs. Lillian F. Cockerill, Sanibel, Florida—410 molluscan shells.

O. Grunwald, Blackwood, N. J.—210 molluscan shells and other miscellaneous marine material.

Parks Department, Toronto—Lioness, mouflon, elk, lynx, Cape ratel, opossum, wombat, Echidna, Rhesus monkey, badger, hornbill, macaw, parrot, barred owl, saw-whet owl, boobook, shrike, turtle.

Mrs. J. E. H. Kelso, Edgewood, B.C.—183 British birds; 383 Canadian birds.

C. R. Allison, 28 Ellerbeck Ave., Toronto—One passenger pigeon.

Dr. Wellington Stephens, 59 High Park Ave., Toronto—3 whooping cranes.

R. V. Lindsay, Arden, Ontario—82 mammals; 55 birds; 15 amphibians; 15 reptiles; 3 fish, and other miscellaneous material.

G. F. Sirman, Opa-Locke, Florida—55 land snails; blue heron; little blue heron; white ibis.

H. A. Carson, Duke of Connaught School, Toronto—3 Aurora trout.

British Museum (Natural History), London, England—3 flying fish.

J. H. Fleming, 267 Rusholme Rd., Toronto—Splendid specimen of pyramid coral; bison skeleton.

Estate of Jas. Stares, 636 Wellington St. W., Toronto—80 mounted birds.

Ernest Oakley, 474 Runnymede Rd., Toronto—A considerable collection of beetles.

Other donations were received from:—Dr. A. E. Allin; N. J. Atkinson; Rev. C. L. W. Bailey; A. B. Baird; Mrs. Henry Barber; Thomas Barnett; Victor Barnett; M. U. Bates; W. D. Bates; Dr. Charles C. Bell; Mrs. Bicknell; Biological & Fish Culture Branch, Department of Game & Fisheries; Biological Board of Canada; D. H. Bissell; R. D. Black; A. A. Blair; S. Boswell; Dr. F. G. Brethour; W. A. Brodie; Major Allan Brooks; H. H. Brown; Lorne Brown; Joseph Brunet; R. F. Cain; Dr. J. A. Campbell; Miss E. G. Carlaw; P. Chappell; J. Chisholm; D. Chitty; C. H. D. Clarke; Mrs. W. Clement; E. D. Clipsham; H. O. Cooper; Chas. E. Corfe; J. M. B. Corkill; Prof. A. F. Coventry; A. E. Crewe; Murray W. Curtis; Danforth Technical School; Eli Davis; J. Diggles; R. G. Dingman; Mrs. Wm. Dugan; Alex Dunca; E. Dutton; W. R. Dymond; R. Edleston; John Edmonds; John H. Edmonds; W. E. Edwards; Thos. Eglund; H. Elkington;

F. H. Emery; Jas. Eshquib; Douglas Fairbanks; Gerald F. Fiddick; Dr. R. E. Foerster; F. E. J. Fry; W. R. Gardner; M. Garfat; Arthur Gibson; E. J. Gilligan; R. Goodall; J. M. Goss; Alex Graesky; J. W. Gravestock; H. U. Green; Major Scott Griffin; Paul Hahn; W. A. Hale; E. R. S. Hall; J. Bruce Hanly; Dr. Paul Harrington; Dr. John L. Hart; H. C. Haskins; A. Hole; Thomas Holmes; L. J. Houston; H. T. Hudson; Jas. Hume; Dr. W. E. Hurlburt; Hydro Electric Power Commission; Harry Ing; Dr. A. B. James; J. Jamieson; Claude E. Johnson; Herbert Johnston; Arthur Jones; A. D. Kean; Orval E. Kelly; Ross J. Kenner; Walter Kishbaugh; Howard H. Krug; Munroe Landon; R. R. Langford; Mrs. Feriel Leduc; J. P. Legris; H. E. LeMasurier; Gus E. Lindblad; L. M. Livingston; Chas. Lloyd; H. W. Lunn; Dr. Jas. M. MacKay; D. A. MacLulich; Brian McCaffrey; Hugh McGillicuddy; J. R. McIntosh; Wm. McMordie; M. J. McPhee; Miss Rosemary Martin; R. O. Merriman; John T. Miner; Miss M. Mitchell; Mrs. O. S. Mitchell; James Mossop; J. A. Munro; A. C. Newcombe; George W. North; Ontario Fisheries Research Laboratory; H. H. Parsons; G. M. Parks; J. R. Patience; Ian Patterson; Dr. A. L. Pritchard; D. M. Prudhomme; Kenneth Racey; James Ratcliffe; S. M. Reynolds; J. S. Richardson; W. E. Ricker; F. C. Ricketts; W. H. Robb; E. Robertson; Mark Robinson; Royal Ontario Museum of Archaeology; J. C. Runnings; Russell J. Rutter; Charles Scadding; Mrs. Jessie Semple; A. P. Silcox; J. A. Simard; Mrs. J. I. Simpson; H. H. Southam; Rev. C. A. G. Spence; W. H. Stainton; W. B. Stallworthy; Dr. Fred Starr; W. E. Steenburgh; Levi Sternberg; Leo A. Stilwell; J. R. Storr; H. P. Stovell; H. W. Swaine; A. Swanson; H. C. Sweetman; Dr. T. M. C. Taylor; S. L. Thompson; W. E. Tinsdill; C. C. Toner; John Townson; A. J. Tracy; Sprague Troyer; Dr. R. M. Turner; Thos. Tyrrell; Alan Twining; University of Washington, Seattle, Department of Fisheries; Wm. A. Veitch; P. Wainman; Dr. E. M. Walker; Sam. Waller; F. H. Warner; Mrs. H. D. Warren; R. V. Whelan; G. V. Wilby; Alderman John Winnett; A. A. Wood; Wm. Wreggitt.

(23) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF GEOLOGY

(*Professor E. S. Moore*)

During the past year the work of placing the collections on exhibition in the new galleries has been practically completed and the storage and workroom facilities have been organised. Fifteen new cases have been added to the galleries and filled with exhibits. With the complete re-arrangement of the collections a very marked improvement in the museum has resulted. A large number of donations from widely scattered sources has been received, for which grateful acknowledgement is made to the donors.

Donations—Large specimen of "greenstone" gold ore from the Dome mine, by Dome Mines, Limited; section of very high grade native silver vein, Seneca-Superior mine, Cobalt, Ont., by the late R. F. Segsworth; large specimen of gold ore from the Kirkland Lake mine, by Kirkland Lake Gold Mines, Limited; by-products of coal, by the Hamilton By-Products Coke Company; glass sand rock and sand by the Pennsylvania Glass Sand Corporation, Lewistown, Pa. and the Pittsburg Silica Sand Company; collection of specimens of magnesite illustrating the origin and occurrence of this mineral in Argenteuil County, Quebec, by Scottish Canadian Magnesite Company; products of magnesite; magnechrome brick, flooring tile, and acoustic and insulating materials manufactured from magnesite, by Canadian Refractories Limited; collection of refractories by the Harbison-Walker Refractories Company, Pittsburg, Pa.; collection of Brazilian ores, by the Geological Survey of Brazil; silica brick and quartzite from Sault Ste. Marie, Ont., by G. S. Cowie; lignite, raw, dried and charred and by-products therefrom, Onakawana lignite field, Ontario, by the

Ontario Research Foundation; series of moulding sands of different types, by G. F. Pettinos, Philadelphia, Pa. and Whitehead Bros. Company, Albany, N.Y.; bar of silver, cobalt metal and alloys, the products of refining silver-cobalt ores at Deloro, Ont., by Deloro Smelting & Refining Company; paint ores from Pointe du Lac, Quebec, by T. H. Argall, and from Champlain, Quebec, by Canada Paint Company; gold ore from the Wright-Hargreaves mine, Kirkland Lake, Ont., by M. Summerhayes; bituminous sands and associated rocks from McMurray, Alberta, by J. C. Sproule; large quantity of asbestos and serpentine from Canadian Johns-Manville Company quarries, Quebec, and asbestos gloves, hand knitted, by W. M. Hiller; mammoth tooth from Iroquois beach, near Hamilton, Ont., by E. M. Proctor; rock illustrating differential weathering by E. Knight, Woodford, Ont.

Purchases—Collection of ores, ornamental stones, native sulphur and copalite from various parts of the world; suite of high grade gold specimens from Bobjo mine, Patricia district, Ontario.

Collections—Radium ores near Wilberforce, Ontario, by the Director.

(24) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF MINERALOGY

(*Director, Professor T. L. Walker*)

The attention of the staff has been largely directed to the installation of the collections in the new quarters assigned to this Museum. The mineral gallery is now provided with the necessary cases for display, and rapid progress has been made in the selection, arrangement and labelling of the specimens. It will be some time before this arrangement is completed. With every new accession, of course, the problem of arrangement of material in the gallery comes up again. Final static arrangement will come only when the Museum ceases to grow.

Naturally very little time was available for collecting and field work. Professor A. L. Parsons, the assistant director, spent three weeks in the Maritime Provinces, Quebec and Eastern Ontario, securing types necessary for the completion of the gallery display. The director spent a similar period in a trip to Western Canada.

The functions of this Museum include the following:

(*a*) Provision of a series of type minerals and rocks as complete as possible for comparison.

(*b*) Display for use of students and visitors of typical specimens of the more important minerals and rocks, suitably labelled, with a view to training in mineralogy and disseminating information as to the mineral resources of the Province.

(*c*) Field work to secure material for display, exchange and scientific study.

(*d*) General investigations, based largely on the minerals in the Museum, and designed to extend the bounds of the mineralogical field—the origin, characteristics, alteration and uses of minerals and rocks.

In the past the attention of the staff has been directed largely to the first two functions. It is hoped that greater attention may be paid to the other objects in the future.

As usual there have been additions due to purchase, collection in the field, exchange and presentation. Important presentations during the year are:

1. A large specimen of gold-telluride in rock from Lake Shore Mines, Ltd.
2. Three spectacular specimens of silver and dyscrasite from the Nipissing Mining Company, Ltd.
3. Large dendritic specimen of native copper from the Calumet and Hecla Mine presented by John Knox, Esq.

4. A large suite of large specimens of Ontario minerals, presented by the Ontario Department of Mines.

To all who have co-operated in the development of the Museum the director expresses his thanks.

(25) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF PALAEONTOLOGY

(Professor W. A. Parks)

During the year 1932-33 the chief additions to the collections were extensive sets of Ontario fossils collected by graduate students, foreign series obtained by purchase, and vertebrate fossils by exchange. The systematic collection of invertebrates has been completely revised and arranged in the new building. This work involved the printing of a large number of labels. In the invertebrate laboratory some hundreds of thin sections of stromatoporoids and bryozoans have been prepared.

In the gallery for fossil reptiles all the large dinosaur mounts from the old museum have been retouched and placed in position and the cases have been supplied with marble bases. A large open mount of *Corythosaurus* has been erected and panel mounts from the old museum have been retouched and placed in position and the cases have been supplied with marble bases. A large open mount of *Corythosaurus* has been erected and panel mounts of two new species of *Struthiomimus* have been installed, also, mounts of several species of turtles, and a mount of a new species of *Champsosaurus*.

In the mammal gallery, the old mount of *Mastodon* has been re-erected and the missing parts restored in plaster. A fine skeleton of *Plesippus* has been mounted and placed on exhibition. All the other specimens from the old gallery have been re-arranged and provided with new labels.

The fish collection has been revised and re-labelled and a new case of *Amphibia* has been installed.

In the vertebrate laboratories, in addition to the work connected with the mounts referred to above, an open mount of *Merycoidodon* has been erected and the balance of the material collected by our expeditions to Dakota and Nebraska has been prepared. Work is proceeding on the remounting of the skeleton of *Dyoplosaurus* and on new dinosaurus.

The equipment of offices, laboratories, and library in the new building has been completed.

The more important acquisitions during the year are as follows:

By donation

Dinosaur egg shells (Protoceratops andrewsi) from Mongolia—American Museum of Natural History, New York.

Collection of fossils from Goderich, Ont.—J. C. Brough, Goderich, Ont.

Corals from Port Colborne, Ont.—F. G. Churchill, Toronto, Ont.

Gangamopteris sp., Permo-Carboniferous of South Africa—Dr. A. P. Coleman, Toronto, Ont.

Fossils from Cataraqui, Ont.—Dr. A. P. Coleman, Toronto, Ont.

Placenticeras whitfieldi, Old Man river, Section 22, Tp. 9, R. 23, W. of 4th M.—Dr. W. S. Dyer, Toronto, Ont.

2 specimens Phacops rana from Ontario—Professor T. McIlwraith, Toronto, Ont.

Whitella impressata, Don Brickyard, Toronto—Dr. J. Satterly, Toronto, Ont.

Eleven specimens of Brassfield Bryozoa—United States National Museum, Washington, D.C.

Collection of Fossils from the Fernie formation, Alberta—Dr. P. S. Warren, Alberta.
Panoramic view of the Rocky Mountains and seven large scale photographs of the Alps—Mr. H. H. Langton, Toronto, Ont.

By purchase

Aspideretes superstes, Highwood River, Alberta—R. L. Fowler, Alberta.
Bohemian fossils—Ward's Natural Science Establishment, Rochester, N.Y.
Brachiopods—Ward's Natural Science Establishment, Rochester, New York.
Bundenbach insects, etc.—Ward's Natural Science Establishment, Rochester, New York.
Neurankylas wyomingensis—Ward's Natural Science Establishment, Rochester, New York.

By exchange

Collection of vertebrate and invertebrate fossils—Geological Survey of Brazil, Rio de Janeiro, Brazil.
Collection of Stegocephalian parts—Dr. E. C. Case, University of Michigan, Ann Arbor, Mich.
Specimens of Hughmilleria socialis and Eurypterus pittsfordensis—I. G. Reimann, Buffalo, N.Y.
Skeleton of fossil horse Plesippus shoshonensis—United States National Museum, Washington, D.C.
Brachiopods and corals—Dr. T. E. Savage, University of Illinois, Urbana, Ill.
Invertebrate fossils—Ohio State University, Columbus, Ohio.

By collection

Collection of fossils from the Ordovician rocks near Ottawa, Ont.—Dr. M. A. Fritz, Toronto, Ont.
Silurian Fossils, Manitoulin Island—Mr. H. G. Way, Toronto, Ont.
Ordovician fossils, Manitoulin Islands—Mr. J. F. Caley, Toronto, Ont.
Silurian fossils, Bruce Peninsula—Mr. J. P. Nowlan, Toronto, Ont.

APPENDIX B

REPORT OF THE REGISTRAR

(A. B. Fennell, Esq., M.A.)

I beg to submit the following statistics for the year ending June 30th, 1933:—

(*a*) Distribution of the staff of the University and University College (furnished by the Bursar).
(*b*) Distribution of the staffs of the federated Arts Colleges (furnished by the Registrars of the colleges).
(*c*) Registration of students by faculties and years.
(*d*) Enrolment in the Arts Colleges (furnished by the Registrars of the colleges).
(*e*) Enrolment in the university departments in Arts (furnished by the departments).
(*f*) Registration in courses in the Faculty of Arts.
(*g*) Registration in courses in the School of Graduate Studies (furnished by the Secretary of the school).
(*h*) Results of annual examinations (furnished by the Secretaries of the faculties).
(*i*) Admission to degrees.
(*j*) Geographical distribution of students (furnished by the Secretaries of the faculties).

(*a*) DISTRIBUTION OF THE STAFF OF THE UNIVERSITY AND UNIVERSITY COLLEGE:

	Professors	Associate Professors	Assistant Professors	Associates	Lecturers	Directors	Assistant Directors	Instructors	Other Sessional Appointments
University (Faculty of Arts).....	37*a*	34*b*	18	—	30	—	—	—	120*b*
University College.....	15*c*	7*g*	9	—	13*d*	—	—	—	4*e*
Faculty of Medicine.....	25*f*	10*g*	23*h*	23	30*h*	—	—	—	199*i*
Faculty of Applied Science.....	15	13	8	—	17*b*	—	—	—	54
Faculty of Household Science....	2	—	2	—	5	—	—	—	9
Ontario College of Education....	8	4	3	—	6	—	—	34*j*	—
Faculty of Forestry.....	2	2	—	—	1	—	—	—	—
Faculty of Music.....	—	—	—	—	3	—	—	—	2
Faculty of Dentistry.....	11*k*	7*b*	1	20*b*	2	—	—	—	8*l*
Social Science.....	—	—	1	—	25	1	1	—	—
Public Health Nursing.....	—	—	—	—	14	1	—	—	1

a 1 also in Social Science; 1 also in Ontario College of Education
b 1 also in Medicine
c 1 also in University; 1 also in Ontario College of Education
d 1 also in Applied Science; 1 also in Ontario College of Education
e 1 also in Dentistry and Forestry
f 1 also in Arts; 1 also in Public Health Nursing
g 1 also in Public Health Nursing
h 1 also in Dentistry
i 1 also in Arts; 2 also in Public Health Nursing
j 2 also in Medicine
k 1 also in Medicine; 1 also in Public Health Nursing
l 1 also in Social Science

(*b*) DISTRIBUTION OF THE STAFFS OF THE FEDERATED ARTS COLLEGES:

	Victoria College	Trinity College	St. Michael's College
Professors.....	14	13	12
Associate professors.....	8	4	..
Lecturers.....	5	2	16
Instructors.....	1	2	..
Fellows.....	1	1	..
Readers.....	3	..	..

(*c*) REGISTRATION OF STUDENTS BY FACULTIES AND YEARS:

The number of students registered in the university, in colleges and faculties, in the session 1932-33 was 7,957, distributed as follows:

				Men	Women	Total
Faculty of Arts				2,217	1,741	3,958
University of Toronto	550	254	804			
University College	843	648	1,491			
Victoria College	484	564	1,048			
Trinity College	179	146	325			
St. Michael's College	170	136	306			
Registered twice	9	7	16			
Faculty of Medicine				775	69	844
Faculty of Applied Science and Engineering				909	5	914
Faculty of Household Science				...	124	124
Ontario College of Education				624	477	1,101
Faculty of Forestry				69	...	69
Faculty of Music				20	19	39
School of Graduate Studies				539	192	731
Faculty of Dentistry				203	32	235
Registered twice				14	44	58
				5,342	2,615	7,957

In departments there were registered 317, distributed as follows:

Department of Social Science	7	91	98
Department of Public Health Nursing	...	187	187
University Extension (Occupational Therapy)	...	13	13
University Extension (Course for Graduate Nurses)	...	13	13
University Extension (Physiotherapy)	...	6	6
	7	310	317

The grand total of registration for the whole university was 8,274, of whom 5,349 were men and 2,925 were women.

In addition there were 4,345 persons registered in the Department of University Extension in courses and at provincial centres which are referred to in detail in Appendix A (14).

The figures may be further analysed as follows:

FACULTY OF ARTS

University of Toronto

	Men	Women	Total
Teachers' Courses and Summer Session	322	216	538
Occasional Arts students	228	38	266
	550	254	804

University College

	Men	Women	Total
First year undergraduates	271	229	500
Second year undergraduates	193	128	321
Third year undergraduates	166	119	285
Fourth year undergraduates	182	148	330
Occasional students	31	24	55
	843	648	1,491

Victoria College

	Men	Women	Total
First year undergraduates	164	186	350
Second year undergraduates	105	115	220
Third year undergraduates	93	109	202
Fourth year undergraduates	122	146	268
Occasional students	...	8	8
	484	564	1.048

Trinity College

	Men	Women	Total
First year undergraduates	74	48	122
Second year undergraduates	39	43	82
Third year undergraduates	26	15	41
Fourth year undergraduates	39	39	78
Occasional students	1	1	2
	179	146	325

St. Michael's College

	Men	Women	Total
First year undergraduates	63	52	115
Second year undergraduates	31	14	45
Third year undergraduates	28	21	49
Fourth year undergraduates	43	42	85
Occasional students	5	7	12
	170	136	306

FACULTY OF MEDICINE

	Men	Women	Total
First year undergraduates	150	17	167
Second year undergraduates	145	10	155
Third year undergraduates	133	9	142
Fourth year undergraduates	107	10	117
Fifth year undergraduates	102	11	113
Sixth year undergraduates	114	10	124
Candidates for Degree of B.Sc. (Med.)	4	..	4
Candidates for D.P.H.	12	..	12
Post Graduate students	5	2	7
Occasional students	3	..	3
	775	69	844

FACULTY OF APPLIED SCIENCE AND ENGINEERING

	Men	Women	Total
First year undergraduates	263	2	265
Second year undergraduates	250	..	250
Third year undergraduates	234	2	236
Fourth year undergraduates	156	1	157
Fifth year undergraduates	6	..	6
	909	5	914

FACULTY OF HOUSEHOLD SCIENCE

	Men	Women	Total
First year undergraduates	..	17	17
Second year undergraduates	..	6	6
Third year undergraduates	..	35	35
Fourth year undergraduates	..	65	65
Occasional student	..	1	1
	..	124	124

ONTARIO COLLEGE OF EDUCATION

	Men	Women	Total
Students in attendance	282	329	611
Extra-mural students	108	106	214
Students in B.Paed. course	246	46	292
Registered twice	12	4	16
	624	477	1,101

FACULTY OF FORESTRY

	Men	Women	Total
First year undergraduates	23	...	23
Second year undergraduates	24	...	24
Third year undergraduates	13	...	13
Fourth year undergraduates	8	...	8
Occasional student	1	...	1
	69	...	69

FACULTY OF MUSIC

	Men	Women	Total
First year undergraduates	5	6	11
Second year undergraduates	4	3	7
Third year undergraduates	9	8	17
Occasional students	2	2	4
	20	19	39

SCHOOL OF GRADUATE STUDIES

	Men	Women	Total
Candidates for Ph.D	140	22	162
Candidates for M.A	144	88	232
Candidates for M.S	8	...	8
Candidates for M.A.Sc	32	1	33
Candidates for M.Arch	2	1	3
Candidates for C.E	1	...	1
Candidates for E.E	1	...	1
Candidates for M.E	1	...	1
Candidates for Mech.E	1	...	1
Candidates for D.Paed	90	17	107
Candidates for M.Sc.F	5	...	5
Candidates for M.S.A	17	...	17
Candidates for M.Sc. (Dent.)	6	...	6
Candidates for D.V.Sc.	3	...	3
Candidates for Mus. Doc	4	...	4
Graduate students	84	63	147
	539	192	731

FACULTY OF DENTISTRY

	Men	Women	Total
First year undergraduates	46	...	46
Second year undergraduates	41	1	42
Third year undergraduates	39	1	40
Fourth year undergraduates	30	1	31
Fifth year undergraduates	36	1	37
Candidates for Degree of B.Sc. (Dent.)	10	...	10
Dental Nurses	...	26	26
Occasional students	...	2	2
Graduate student	1	...	1
	203	32	235

DEPARTMENT OF UNIVERSITY EXTENSION

	Men	Women	Total	Grand Total
B.A. Course				
Summer Session:				
Regular students	155	106	261	...
Occasional students	15	4	19	280
Teachers' Classes:				
Toronto:				
Regular students	211	120	331	...
Occasional students	8	7	15	346
Specialists' Courses				
Summer Session:				
Regular students	20	10	30	30
Registered twice	87	31	118	118

DEPARTMENT OF SOCIAL SCIENCE

	Men	Women	Total
First year full-time students	2	30	32
Second year full-time students	4	25	29
"Apprentice" students (Second year)	1	6	7
Part-time students	...	30	30
	7	91	98

DEPARTMENT OF PUBLIC HEALTH NURSING

	Men	Women	Total
Full-time students	...	46	46
Part-time students	...	141	141
	...	187	187

(*d*) ENROLMENT IN THE ARTS COLLEGES

(1) University College:

	Greek	Latin	Ancient History	Orientals	Ancient Oriental History	English	German	German (Sc.)	French	Ethics	Oriental Literature
First Year—											
Pass	9	46	36	21	12	248	27	106	382	17	112
Honours	6	41	76	2	2	64	29	..	58	19	..
Second Year—											
Pass	5	12	14	11	22	103	15	33	142	66	92
Honours	7	20	9	2	2	32	15	..	33	1	..
Third Year—											
Pass	1	17	7	14	25	112	15	..	82	41	61
Honours	6	19	17	..	..	32	14	..	22	6	..
Fourth Year—											
Pass	8	24	11	4	22	134	12	..	104	48	69
Honours	2	7	4	3	3	28	14	..	32	9	..
Commerce & Finance	..	..	..	..	..	..	..	..	6	..	..
Totals—											
Pass	23	99	68	50	81	597	69	139	710	172	334
Honours	21	87	106	7	7	156	72	..	145	35	..
Commerce & Finance	..	..	..	..	..	..	..	..	6	..	..
Teachers' Courses	..	5	..	..	..	56	..	..	119	..	..
Graduate Studies	4	9	1	14	..	60	7	..	18	1	..
Other Faculties	..	..	..	..	..	..	211	..	161	..	..
Grand Total	48	200	175	71	88	869	359	139	1,159	208	334

(2) Victoria College:

	Greek	Latin	Ancient History	Orientals	Ancient Oriental History	English	German	German (Sc.)	French	Ethics	Religious Know.
First Year—											
Pass	3	20	31	..	5	155	13	56	192	22	146
Honours	8	40	51	..	..	56	20	..	52	8	..
Commerce & Finance	..	..	..	..	..	..	..	..	20	..	..
Second Year—											
Pass	1	8	5	..	4	53	5	24	54	44	93
Honours	21	35	20	..	..	37	18	..	40	..	..
Commerce & Finance	..	..	..	..	..	..	..	..	10	..	..
Third Year—											
Pass	1	8	9	..	6	71	3	..	36	12	82
Honours	13	22	13	..	..	23	12	..	18	10	..
Commerce & Finance	..	..	..	..	..	..	..	..	4	..	..
Fourth Year—											
Pass	8	18	29	..	2	126	8	..	76	37	122
Honours	4	4	4	..	..	29	12	..	14	16	..
Commerce & Finance	..	..	..	..	..	..	..	..	4	..	..
Totals—											
Pass	13	54	74	..	17	405	29	80	358	115	443
Honours	46	101	88	..	..	145	62	..	124	34	..
Commerce & Finance	..	..	..	..	..	..	..	..	38	..	..
Grand Total	59	155	162	..	17	550	91	80	520	149	443

(3) Trinity College:

	Greek	Latin	Ancient History	Orientals	Ancient Oriental History	English	German	German (Sc.)	French	Ethics	Religious Know.
First Year—											
Pass	..	7	6	..	..	42	7	15	72	5	111
Honours	5	13	18	..	..	14	5	..	12	1	..
Second Year—											
Pass	2	5	1	..	1	43	5	1	39	12	76
Honours	6	10	5	..	..	8	4	..	11	..	..
Third Year—											
Pass	..	1	..	2	..	5	1	..	9	4	34
Honours	2	4	2	..	..	3	6	..	7	1	..
Fourth Year—											
Pass	3	10	1	..	..	24	6	..	34	17	71
Honours	2	2	2	..	..	9	5	..	6	..	..
Commerce & Finance	..	..	..	..	..	..	..	..	1	..	..
Totals—											
Pass	5	23	8	2	1	114	19	16	154	38	292
Honours	15	29	27	..	..	34	20	..	36	2	..
Commerce & Finance	..	..	..	..	..	..	..	..	1	..	..
Grand Total	20	52	35	2	1	148	39	16	191	40	292

(4) St. Michael's College:

	Greek	Latin	Ancient History	English	German	German (Sc.)	French	Ethics	Philosophy	Religious Know.
First Year—										
Pass	3	56	2	67	5	9	58	..	44	88
Honours	1	13	5	18	6	..	15	..	11	..
Second Year—										
Pass	1	22	..	30	2	2	22	14	26	38
Honours	1	2	1	3	2	..	4	3	3	..
Commerce & Finance	..	..	..	..	..	..	1	..	..	..
Third Year—										
Pass	2	22	..	14	2	2	12	3	14	27
Honours	..	3	..	2	..	..	5	13	13	..
Fourth Year—										
Pass	..	44	..	50	..	4	45	30	48	61
Honours	3	6	3	6	1	..	4	7	7	..
Totals—										
Pass	6	144	2	161	9	17	137	47	132	183
Honours	5	24	9	29	9	..	28	23	34	..
Commerce & Finance	..	..	..	..	..	..	1	..	..	..
Graduate Students	..	..	..	..	..	..	..	..	10	..
Grand Total	11	168	11	190	18	17	166	70	176	183

(*e*) ENROLMENT IN THE UNIVERSITY DEPARTMENTS IN ARTS:

The following tables exhibit the numbers attending lectures in the university departments in the Faculty of Arts, together with the number of those taking the practical work in the laboratories:

Department of Mathematics

	Pass	Pass and Honours	Honours
Faculty of Arts—			
First Year	105	..	140
Second Year	90	..	85
Third Year	85	..	52
Fourth Year	55	..	32
Teachers' Classes	11	..	..
Occasional Students	4	..	..
Faculty of Medicine—			
First Year	20	..	..
Faculty of Applied Science and Engineering—			
First Year	..	266	..
Second Year	..	226	..
Faculty of Forestry—			
First Year	23	..	..
School of Graduate Studies	..	..	40
Ontario College of Optometry	17	..	..
Totals	410	492	349

Department of Applied Mathematics

	Pass and Honours	Honours
Faculty of Arts—		
Second Year	..	36
Third Year	..	29
Fourth Year	..	7
Occasional Students	..	2
Faculty of Applied Science and Engineering—		
Second Year	59	..
School of Graduate Studies	20	..
Totals	79	74

Department of Astronomy

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	2	..	..	2
Second Year	40	..	..	..
Third Year	6	3	22	28
Fourth Year	4	..	6	7
Faculty of Applied Science and Engineering—				
Second Year	38	..	..	..
Totals	90	3	28	37

Department of Physics

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	249	..	242	285
Second Year	23	..	118	129
Third Year	8	..	37	42
Fourth Year	28	..	21	47
Teachers' Classes	17	..	..	17
Summer Session (Specialists' Courses)	..	..	12	12
Faculty of Medicine—				
First Year	..	171	..	171
Third Year	..	3	..	3
Faculty of Household Science—				
First Year	..	..	18	18
Faculty of Forestry—				
First Year	..	24	..	24
Faculty of Dentistry—				
First Year	..	45	..	45
School of Graduate Studies	..	..	86	35
Ontario College of Optometry	..	20	..	20
Totals	325	263	534	848

Department of Biology

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	330	..	158	253
Second Year	36	..	110	146
Third Year	93	..	12	105
Fourth Year	67	..	16	83
Teachers' Classes	65	..	..	65
Faculty of Medicine—				
First Year	..	168	..	168
Third Year	..	7	..	..
Faculty of Household Science—				
First Year	15	..	..	15
Faculty of Forestry—				
First Year	..	24	..	24
Fourth Year	..	8	..	8
Faculty of Dentistry—				
First Year	..	46	..	46
School of Graduate Studies	..	..	..	57
Department of Public Health Nursing	..	6	..	6
Ontario College of Agriculture	..	308	..	308
Ontario College of Optometry	..	18	..	18
Totals	606	585	296	1,302

Department of Botany

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	249	..	164	178
Second Year	15	..	59	59
Third Year		..	5	20
Fourth Year	15	..	6	21
Occasional Student	1	..	..	1
Faculty of Applied Science and Engineering—				
First Year	..	77	..	77
Faculty of Household Science—				
First Year	16	..	..	16
Third Year	36	..	..	36
Faculty of Forestry—				
First Year	..	24	..	24
Fourth Year	..	8	..	8
School of Graduate Studies	..	..	34	19
Ontario College of Pharmacy				
First Year	..	89	..	89
Second Year	..	106	..	106
Totals	332	304	268	654

Department of Chemistry

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	299	..	219	283
Second Year	18	..	132	140
Third Year	11	..	14	17
Fourth Year	16	..	10	26
Teachers' Classes	37	..	..	37
Occasional Student	1	..	..	1
Faculty of Medicine—				
First Year	..	168	..	168
Second Year	..	121	..	121
Faculty of Applied Science and Engineering—				
First Year	..	81	..	81
Second Year	..	66	..	66
Third Year	..	123	..	123
Fourth Year	..	3	..	3
Faculty of Household Science—				
First Year	..	17	..	17
Second Year	..	6	..	..
Third Year	..	29	..	..
Faculty of Forestry—				
First Year	23	..	..	23
Second Year	27	..	..	..
Faculty of Dentistry—				
First Year	..	42	..	42
Second Year	..	42	..	42
Third Year	..	40	..	40
School of Graduate Studies	..	..	38	26
Department of Public Health Nursing	7	..	..	7
Ontario College of Pharmacy—				
First Year	88	..	..	88
Second Year	106	..	..	106
Totals	633	738	413	1,457

Department of Geology and Palaeontology

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	256	..	102	..
Second Year	9	..	33	42
Third Year	6	..	3	9
Fourth Year	14	..	10	15
Teachers' Classes	26	..	..	26
Occasional Students	2	..	..	2
Faculty of Applied Science and Engineering—				
Second Year	..	64	..	7
Third Year	..	53	..	13
Fourth Year	..	13	..	13
Faculty of Forestry—				
Second Year	..	24	..	..
Third Year	..	13	..	13
School of Graduate Studies	..	..	17	17
Totals	313	167	165	157

Department of Mineralogy and Petrography

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	25	..	..	25
Second Year	1	..	32	33
Third Year	..	..	13	4
Fourth Year	..	..	4	3
Teachers' Classes	28	..	..	28
Faculty of Applied Science and Engineering—				
First Year	..	112	..	112
Second Year	..	57	..	57
Third Year	..	13	..	13
Fourth Year	..	1	..	1
Faculty of Forestry—				
Second Year	..	24	..	24
School of Graduate Studies	..	..	13	13
Totals	54	207	62	313

Department of Philosophy

	Pass	Honours
Faculty of Arts—		
First Year	35	62
Second Year	196	26
Third Year	144	27
Fourth Year	190	42
Teachers' Classes	60	..
School of Graduate Studies	..	56
Totals	625	213

Department of Psychology

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	141	..	17	..
Second Year	68	44	6	73
Third Year	65	62	22	112
Fourth Year	118	48	18	3
Occasional Students	4	..	..	..
Faculty of Medicine—				
Second Year	..	138	..	..
Third Year	..	35	..	35
Fourth Year	..	24	..	..
Faculty of Household Science—				
First Year	10	..	..	..
Second Year	4	..	..	..
Third Year	2	..	..	..
Fourth Year	12	..	..	..
School of Graduate Studies	..	..	60	17
Department of Social Science—				
First Year	30	..	..	..
Second Year	22	..	..	..
Occasional Student	1	..	..	..
Department of Public Health Nursing	22	..	..	..
Ontario College of Optometry	12	..	..	..
Department of University Extension—				
Occupational Therapy	13	..	..	..
Evening Classes	191	..	..	..
Hospital Administration	14	..	..	..
Centralized Pupil Nurses	191	..	..	..
Totals	920	351	123	240

Department of Political Science

	Pass	Pass and Honours	Honours
Faculty of Arts—			
First Year	165	100	163
Second Year	106	14	119
Third Year	124	12	93
Fourth Year	207	60	103
Teachers' Classes	92	..	..
Occasional Students	..	6	..
Faculty of Household Science—			
Second Year	..	4	..
Fourth Year	..	12	..
Faculty of Forestry—			
Third Year	..	12	..
School of Graduate Studies	..	..	30
Totals	644	220	508

Department of Modern History

	Pass	Honours
Faculty of Arts—		
First Year	136	149
Second Year	68	94
Third Year	67	65
Fourth Year	134	66
Teachers' Classes	141	..
Occasional Students	16	8
School of Graduate Studies	..	42
Teachers' Course, Correspondence	111	..
Special Extension Classes	25	..
Totals	698	424

Department of Italian and Spanish

	Italian		Spanish	
	Pass	Honours	Pass	Honours
Faculty of Arts—				
First Year	17	4	103	37
Second Year	6	11	51	35
Third Year	3	5	29	15
Fourth Year	7	7	33	10
School of Graduate Studies	..	1	..	8
Totals	33	28	216	105

Methods of Research, Bibliography—3.

Department of Household Science
(Faculty of Household Science)

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	..	..	66	..
Second Year	2	..	42	44
Third Year	5	..	36	40
Fourth Year	15	..	36	51
Occasional Students	..	..	7	7
Faculty of Household Science—				
First Year	..	17	..	..
Second Year	..	6	..	6
Third Year	29	..	6	35
Fourth Year	60	..	5	65
Occasional Student	..	1	..	1
School of Graduate Studies	..	..	6	6
Department of Public Health Nursing	31	..	..	31
Totals	142	24	204	286

Department of Food Chemistry
(Faculty of Household Science)

	Pass	Honours	Laboratory
Faculty of Arts—			
Second Year	8	2	10
Third Year	8	..	8
Fourth Year	27	36	63
Occasional Students	..	7	7
Faculty of Household Science—			
Second Year	6	..	6
Third Year	29	..	29
Fourth Year	60	5	65
School of Graduate Studies	..	6	6
Totals	138	56	194

(*f*) REGISTRATION IN COURSES IN THE FACULTY OF ARTS

Courses	First Year				Second Year				Third Year				Fourth Year				
	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	Totals
Pass	202	141	45	78	109	48	45	34	102	66	11	27	163	129	47	64	1,311
Classics	6	4	4	..	6	13	5	1	5	5	2	..	2	3	2	3	61
Greek and Hebrew	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2
Oriental Languages	1	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	4
Hebrew and Ancient History	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Latin, (French or Greek Option)	5	4	2	5	2	7	..	..	4	8	1	2	..	1	..	2	43
Modern Languages	30	23	7	6	17	27	7	3	21	18	7	3	30	15	6	2	222
English and History	25	31	7	2	19	15	4	1	22	17	2	..	13	21	5	2	186
Modern History	5	1	5	..	1	2	1	..	5	5	2	..	6	10	4	..	47
Political Science and Economics	28	20	14	..	16	13	2	..	14	1	3	..	12	4	2	..	129
Sociology	2	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
Law	17	3	7	..	10	3	3	..	5	4	..	..	10	6	2	..	70
Philosophy	3	1	..	11	1	..	..	3	7	6	2	13	8	9	..	4	68
Philosophy (English or History Option)	6	7	1	..	5	5	..	..	..	3	..	..	..	7	..	3	37
Psychology	6	1	1	..	2	3	..	..	4	4	..	..	3	..	..	..	24
Mathematical and Physical Sciences	41	23	4	7	..	..	..	..	..	..	..	..	..	..	..	..	75
Mathematics	..	..	..	..	3	..	2	..	2	4	1	..	2	1	..	..	15
Applied Mathematics	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Mathematics and Physics	..	..	..	..	13	10	1	1	12	8	..	2	2	10	1	1	61
Physics and Chemistry	..	..	..	..	4	..	..	..	1	..	..	..	1	1	..	1	8
Physics and Geology	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	3
Natural and Physical Sciences	51	34	10	2	..	..	..	..	..	..	..	..	..	..	..	..	97
Physics	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Biology	..	..	..	..	8	1	1	..	3	..	1	..	1	3	..	..	18
Physiology and Biochemistry	..	..	..	..	2	2	..	..	..	2	..	..	1	..	1	..	8
Biological and Medical Sciences	..	..	..	..	27	7	2	..	10	11	5	..	10	7	1	..	80
Chemistry	..	..	..	..	6	2	1	1	4	5	..	..	3	1	..	1	25
Chemistry, Mineralogy and Geology	..	..	..	..	3	9	..	..	2	..	1	..	..	1	..	..	15
Geology and Mineralogy	..	..	..	..	1	4	..	..	1	..	..	..	..	..	..	..	6
Science (General)	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	4
Food Chemistry	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	2
Household Economics	34	27	5	2	20	19	3	..	19	15	1	1	12	22	1	1	182
Commerce and Finance	37	25	10	2	41	25	5	1	42	20	2	1	46	17	6	..	280
Totals	500	350	121	116	321	220	82	45	285	202	41	49	330	268	78	85	3,093

Department	Ph.D.	M.A.	M.S.	M.A. Sc.	M.Arch.	C.E.	E.E.	M.E.	Mech. E.	D. Paed.	M.Sc. F.	M.S.A.	M.Sc. (Dent.)	D.V. Sc.	Mus. Doc.	Grad. Stud.
Anatomy	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Applied Mathematics	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Anthropology	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Architecture	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..
Biochemistry	12	3	..	..	..	..	..	..	..	..	..	1	..	..	..	4
Biology	18	9	..	..	..	..	..	..	..	..	..	4	..	..	..	4
Botany	19	3	..	..	..	..	..	..	..	..	..	3	..	..	..	4
Chemistry	12	17	..	..	..	..	..	..	..	..	..	4	..	..	..	2
Chemical Engineering	9	..	..	4	..	..	..	..	..	..	..	..	..	..	..	1
Civil Engineering	..	..	..	7	..	1	..	..	..	..	..	..	..	..	..	..
Classics	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	7
Dentistry	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	..
Educational Theory	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Electrical Engineering	..	..	..	9	..	..	1	..	..	..	..	..	..	..	..	1
English	1	20	..	..	..	..	..	..	..	..	..	..	..	..	..	33
Epidemiology and Biometrics	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Food Chemistry	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Forestry	1	..	..	..	..	..	..	..	..	..	5	..	..	..	..	1
Geology	10	4	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Germanics	1	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..
History	7	22	..	..	..	..	..	..	..	..	..	..	..	..	..	7
Household Science	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Hygiene and Preventive Medicine	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Law	3	11	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Mathematics	5	3	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Mechanical Engineering	..	..	..	6	..	..	..	..	1	..	..	..	..	..	..	..
Metallurgical Engineering	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..
Mineralogy	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mining Engineering	..	..	..	4	..	..	..	1	..	..	..	..	..	..	..	..
Music	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..
Pathology and Bacteriology	2	6	..	..	..	..	..	..	..	..	..	1	..	..	..	..
Pathological Chemistry	2	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pedagogy	..	..	..	..	..	..	..	..	..	107	..	..	..	..	..	..
Pharmacology	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Philosophy	14	27	..	..	..	..	..	..	..	..	..	..	..	..	..	10
Physics	18	10	..	..	..	..	..	..	..	..	..	..	..	..	..	4
Physiology	2	3	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Political Science	4	15	..	..	..	..	..	..	..	..	..	3	..	..	..	11
Psychiatry	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Psychology	3	18	..	..	..	..	..	..	..	..	..	..	..	..	..	32
Romance Languages	3	17	..	..	..	..	..	..	..	..	..	..	..	..	..	7
Semitics	6	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Surgery	..	..	8	..	..	..	..	..	..	..	..	..	..	..	..	..
Veterinary Science	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..
Special Committee	1	4	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Totals	162	232	8	33	3	1	1	1	1	107	5	17	6	3	4	147

(*h*) RESULTS OF THE ANNUAL EXAMINATIONS

FACULTY OF ARTS

First Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Honours Deferred	Debarred
Pass	..	188	133	44	66	431	238	96	97	3	..	61
Supplementals	..	33	20	19	11	83	54	29	..	..	..	3
Classics	..	6	5	4	..	15	15	..	..	1	..	..
Greek and Hebrew	..	1	..	..	..	1	1	..	..	..	..	..
Oriental Languages	..	1	..	..	..	1	1	..	..	..	..	..
Latin (French or Greek Option)	..	5	4	2	5	16	13	1	2	1	..	1
Modern Languages	..	28	22	7	5	62	48	4	10	..	..	..
English and History	..	24	31	6	2	63	44	1	18	1	..	..
Modern History	..	5	1	5	..	11	8	1	2	..	..	..
Political Science and Economics	..	25	20	14	..	59	34	12	13	1	3	3
Sociology	..	4	5	..	..	9	8	..	1	..	..	..
Law	..	16	3	7	..	26	18	2	6	..	..	..
Philosophy	..	4	1	..	11	16	14	2	..	1	..	1
Philosophy (English or History Option)	..	5	7	1	..	13	9	2	2	..	..	..
Psychology	..	6	1	1	..	8	5	2	1	..	..	..
Mathematical and Physical Sciences	..	40	23	4	6	73	43	3	27	..	..	..
Science	..	50	31	10	2	93	60	7	26	..	..	1
Household Economics	..	33	24	5	2	64	34	17	13	..	1	2
Commerce and Finance	..	37	25	9	2	73	45	9	19	2	..	3
Occasional Students	3	4	2	..	1	10	4	6	..	..	..	..
Totals	3	515	358	138	113	1,127	696	194	237	10	4	75

Second Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Transferred	Failed	Aegrotat	Honours Deferred	Debarred
Pass	..	107	50	45	34	236	144	44	..	48	3	..	6
Supplementals	..	23	23	3	8	57	35	22	..	..	..	..	..
Classics	..	5	13	5	1	24	21	..	1	2	1	..	..
Oriental Languages	..	1	..	..	..	1	1	..	..	..	..	..	..
Hebrew and Ancient History	..	1	..	..	..	1	1	..	..	..	..	..	..
Latin (French or Greek Option)	..	2	7	..	..	9	4	2	1	2	1	..	..
Modern Languages	..	17	26	7	3	53	41	2	6	4	1	..	..
English and History	..	19	15	4	1	39	37	1	1	..	1	..	..
Modern History	..	1	2	1	..	4	4	..	..	..	..	..	..
Political Science and Economics	..	15	13	2	..	30	17	4	7	2	2	..	1
Law	..	9	3	3	..	15	13	..	1	1	1	1	1
Philosophy	..	1	..	..	3	4	3	1	..	..	..	1	1
Philosophy (English or Hist. Option)	..	5	5	..	..	10	8	2	..	..	..	..	..
Psychology	..	2	3	..	..	5	4	1	..	..	..	..	..
Mathematics	..	3	..	2	..	5	4	1	..	..	..	..	1
Mathematics and Physics	..	12	10	1	1	24	15	1	3	5	2	..	..
Physics and Chemistry	..	4	..	..	..	4	1	2	..	1	..	..	..
Physics and Geology	..	2	..	..	..	2	1	1	..	..	..	1	1
Biology	..	8	1	1	..	10	8	2	..	..	1	..	1
Physiology and Biochemistry	..	2	1	..	..	3	2	1	..	..	..	..	..
Biological and Medical Sciences	..	25	7	2	..	34	19	7	2	6	..	..	..
Chemistry	..	6	2	1	1	10	3	3	3	1	1	..	1
Chemistry, Mineralogy and Geology	..	3	9	..	..	12	3	4	3	2	..	1	2
Geology and Mineralogy	..	1	3	..	..	4	2	1	..	1	..	1	1
Science (General)	..	..	4	..	..	4	..	..	..	4	..	..	..
Food Chemistry	..	1	1	..	..	2	2	..	..	..	..	..	..
Household Economics	..	18	19	3	..	40	31	4	3	2	2	..	..
Commerce and Finance	..	39	24	5	1	69	48	11	2	8	1	..	..
Occasional Students	6	1	..	..	..	7	6	1	..	..	..	..	..
Totals	6	328	246	85	53	718	478	118	33	89	17	5	16

Third Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Transferred	Failed	Aegrotat	Honours Deferred	Debarred
Pass	..	98	64	11	28	201	116	51	..	34	4	..	17
Supplementals	..	43	33	15	15	106	87	19	..	..	..	..	2
Classics	..	5	5	2	..	12	10	..	2	..	1	..	..
Latin (French or Greek Option)	..	4	8	1	2	15	12	1	2	..	..	..	..
Modern Languages	..	21	18	7	3	49	40	..	7	2	..	..	..
English and History	..	22	17	2	..	41	39	..	2	..	2	..	1
Modern History	..	5	5	2	..	12	9	2	..	1	..	..	1
Political Science and Economics	..	14	1	3	..	18	16	..	..	2	..	..	..
Law	..	5	4	..	..	9	9	..	..	..	..	..	..
Philosophy	..	5	6	2	13	26	20	5	..	1	..	1	2
Philosophy (English or History Option)	..	..	3	..	..	3	3	..	..	..	..	..	..
Psychology	..	4	4	..	..	8	4	..	2	2	..	..	..
Mathematics	..	2	4	..	..	6	5	..	..	1	1	..	..
Mathematics and Physics	..	12	6	..	2	20	18	..	1	1	..	..	..
Physics and Chemistry	..	1	..	..	..	1	1	..	..	..	..	..	..
Biology	..	3	..	1	..	4	3	..	..	1	..	..	..
Physiology and Biochemistry	..	..	2	..	..	2	2	..	..	..	..	..	..
Biological and Medical Sciences	..	10	11	5	..	26	17	1	6	2	..	..	..
Chemistry	..	3	5	..	..	8	8	..	..	..	..	..	..
Chemistry, Mineralogy and Geology	..	2	..	1	..	3	..	..	2	1	..	..	..
Geology and Mineralogy	..	1	..	..	..	1	1	..	..	..	..	..	..
Household Economics	..	18	15	1	1	35	26	5	3	1	1	1	2
Commerce and Finance	..	41	20	2	1	64	42	16	2	4	1	3	5
Occasional Students	2	1	2	..	..	5	2	3	..	..	..	..	..
Totals	2	320	233	55	65	675	490	103	29	53	10	5	30

Fourth Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Degree without Honours
Pass	..	160	128	46	63	397	343	38	16	6	..
Supplementals	..	13	9	2	5	29	19	10	..	..	..
Classics	..	2	3	2	2	9	8	1	..	..	..
Greek and Hebrew	..	1	..	..	..	1	1	..	..	..	..
Oriental Languages	..	2	..	..	..	2	2	..	..	..	..
Latin (French or Greek Option)	..	..	1	..	2	3	3	..	..	..	..
Modern Languages	..	30	15	6	2	53	51	..	..	1	2
English and History	..	13	20	5	2	40	40	..	..	..	..
Modern History	..	6	9	4	..	19	19	..	..	..	..
Political Science and Economics	..	11	4	2	..	17	17	..	..	..	..
Law	..	10	6	2	..	18	18	..	..	1	..
Philosophy	..	8	8	..	4	20	17	2	..	1	1
Philosophy (English or History Option)	..	..	7	..	3	10	10	..	..	..	..
Psychology	..	3	..	..	..	3	3	..	..	..	..
Mathematics	..	2	1	..	..	3	3	..	..	..	..
Applied Mathematics	..	1	..	..	..	1	1	..	..	..	..
Mathematics and Physics	..	2	10	1	1	14	14	..	..	..	..
Physics and Chemistry	..	1	1	..	1	3	2	1	..	..	..
Physics and Geology	..	..	..	..	1	1	1	..	..	..	..
Physics	..	1	..	..	..	1	..	..	..	..	1
Biology	..	1	3	..	..	4	4	..	..	..	..
Physiology and Biochemistry	..	1	..	1	..	2	2	..	..	..	..
Biological and Medical Sciences	..	10	6	1	..	17	17	..	..	..	..
Chemistry	..	3	1	..	1	5	5	..	..	..	..
Chemistry, Mineralogy and Geology	..	..	1	..	..	1	1	..	..	..	..
Household Economics	..	12	22	1	1	36	36	..	..	..	..
Commerce and Finance	..	46	17	6	..	69	69	..	..	..	..
Occasional Students	2	3	..	..	..	5	3	2	..	..	..
Totals	2	342	272	79	88	783	709	54	16	9	4

TEACHERS' CLASSES

All Years

	Passed	Conditioned	Total
May Examination	251	72	323
September Examination	239	60	299
	490	132	622
Duplicates			177
Totals			445

FACULTY OF MEDICINE

	Passed	Conditioned	Failed
First Year	90	23	49
Second Year	97	17	11
Third Year	86	27	13
Fourth Year	91	21	5
Fifth Year	88	23	3
Sixth Year	118	8	..
Diploma in Public Health	8	..	..
B.Sc. (Med.)	4	..	..
Totals	582	119	81

FACULTY OF APPLIED SCIENCE AND ENGINEERING

	Passed with Honours	Passed	Conditioned	Failed
First Year—				
Civil Engineering	3	16	4	4
Mining Engineering	3	17	6	5
Mechanical Engineering	8	35	18	13
Architecture	2	12	7	2
Chemical Engineering	9	47	19	19
Electrical Engineering	8	40	26	9
Metallurgical Engineering	3	2	..	..
Second Year—				
Civil Engineering	4	30	14	5
Mining Engineering	1	9	1	4
Mechanical Engineering	9	32	16	16
Architecture	..	5	1	1
Chemical Engineering	7	37	20	12
Electrical Engineering	8	38	18	10
Metallurgical Engineering	..	7	4	..
Third Year—				
Civil Engineering	9	25	7	2
Mining Engineering	..	13	4	..
Mechanical Engineering	10	42	15	7
Architecture	4	7	1	..
Chemical Engineering	13	22	6	2
Electrical Engineering	10	42	11	7
Metallurgical Engineering	4	8	1	..
Fourth Year—				
Civil Engineering	5	10	4	1
Mining Engineering	3	9	3	..
Mechanical Engineering	11	37	13	1
Architecture	3	6	3	..
Chemical Engineering	10	23	1	..
Electrical Engineering	8	25	11	..
Metallurgical Engineering	..	3	..	..
Fifth Year—				
Architecture	4	2	..	..
Totals	159	601	234	120

FACULTY OF HOUSEHOLD SCIENCE

	Passed	Conditioned	Failed
First Year	6	4	5
Second Year	2	2	2
Third Year	30	2	3
Fourth Year	46	11	8
Occasional student	..	1	..
Supplementals	1	..	..
Totals	85	20	18

ONTARIO COLLEGE OF EDUCATION

	Passed	Failed
*High School Assistants' Course	536	..
Specialists' Courses	176	..
First Class Public School Course	76	..
Elementary Art Course	53	..
Specialists' Art Course	16	..
Elementary Commercial Course (passed in part)	52	..
Elementary Music Course	8	..
Elementary Physical Education Course	207	..
Specialists' Physical Education Course	40	..
Intermediate Household Science Course	8	..
Librarians' Course	42	..
Bachelor of Pedagogy Course	29	..
Bachelor of Pedagogy Course (passed in part)	110	..
Number who failed in whole or part	..	178
Totals	1,353	178

*Many of these are included among those who passed or failed in the other courses in this list.

FACULTY OF FORESTRY

	Passed	Conditioned	Failed
First Year	8	8	7
Second Year	21	..	3
Third Year	11	1	1
Fourth Year	8	..	..
Totals	48	9	11

FACULTY OF MUSIC

	Passed	Conditioned	Failed
First Year	1	..	2
Second Year	..	1	4
Third Year	5	2	4
Totals	6	3	10

FACULTY OF DENTISTRY

	Passed	Conditioned	Failed
First Year	22	16	8
Second Year	30	11	1
Third Year	32	7	1
Fourth Year	31	..	..
Fifth Year	37	..	..
Supplementals	1	1	..
B.Sc. (Dent.) Candidates	4	2	..
Dental Nurses	24	1	1
Totals	181	38	11

DEPARTMENTS

The numbers examined in the different departments of the University, including those persons granted standing for military service, were as follows:

Arts:		
Fourth Year	783	
Third Year	675	
Second Year	718	
First Year	1,127	
Teachers' Course	445	
Graduates (Specialist Standing)	64	
		3,812
Medicine:		
Sixth Year	126	
Fifth Year	114	
Fourth Year	117	
Third Year	126	
Second Year	125	
First Year	162	
Diploma in Public Health	8	
B.Sc. (Med.)	4	
		782
Applied Science and Engineering:		
Fifth Year	6	
Fourth Year	155	
Third Year	227	
Second Year	235	
First Year	257	
		880
Household Science		123
Education		912
Forestry		68
Music		19
Graduate Studies		200
Dentistry		230
Social Science		98
Public Health Nursing		46
Law		12
Pharmacy		205
Agriculture		71
Veterinary Science		18
Local Examinations in Music		14,595

(*i*) ADMISSION TO DEGREES:

	Men	Women	Total
LL.D. (Honorary)	16	..	16
Ph.D	28	5	33
M.A	77	41	118
M.S	1	...	1
M.A.Sc	20	...	20
C.E	1	...	1
E.E	1	...	1
M.E	1	...	1
D.Paed	4	1	5
Mus. Doc	1	...	1
M.S.A	6	...	6
B.A	297	352	649
B.Comm	67	3	70
M.D	123	10	133
M.B	2	...	2
B.Sc. (Med.)	3	...	3
B.A.Sc	124	...	124
B.Arch	6	...	6
B.H.Sc	...	51	51
B.Paed	27	2	29
B.Sc.F	10	...	10
Mus. Bac	2	3	5
D.D.S	38	1	39
B.Sc. (Dent.)	4	...	4
LL.B	5	...	5
B.S.A	62	...	62
D.V.Sc	2	...	2
B.V.Sc	18	...	18
Phm.B	92	6	98
Totals	1,038	475	1,513

(*j*) GEOGRAPHICAL DISTRIBUTION OF STUDENTS:

FACULTY OF ARTS

	University of Toronto	University College	Victoria College	Trinity College	St. Michael's College	Duplicates	Totals
Ontario: (1) Province	369	557	533	160	137	6	1,750
(2) Toronto	413	859	471	145	138	7	2,019
Nova Scotia	..	3	1	1	1	..	6
New Brunswick	1	4	1	2	1	..	9
Prince Edward Island	..	2	..	..	..	..	2
Quebec	8	2	1	..	3	..	14
Manitoba	2	5	..	2	..	..	9
Saskatchewan	3	11	13	1	6	..	34
Alberta	1	12	4	2	3	..	22
British Columbia	2	2	3	6	1	..	14
United States	4	23	8	4	16	3	52
Elsewhere	1	11	13	2	..	..	27
Totals	804	1,491	1,048	325	306	16	3,958

THE UNIVERSITY

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry	Department of Social Science	Department of Public Health Nursing	Course in Occupational Therapy	Course for Graduate Nurses	Physiotherapy	Registered Twice	TOTALS
Ontario:																
(1) Province	1,750	318	421	44	668	41	14	214	95	35	114	11	7	1	19	3,714
(2) Toronto	2,019	428	459	77	337	20	20	336	88	44	51	1	1	4	35	3,850
Nova Scotia	6	5	1	..	5	..	..	21	..	3	3	..	1	..	..	45
New Brunswick	9	5	1	..	2	..	..	13	1	1	3	..	..	..	..	35
Prince Edward Island	2	..	..	..	1	..	..	3	..	..	3	..	..	..	..	9
Quebec	14	5	2	..	16	1	..	8	3	1	2	..	..	..	..	52
Manitoba	9	3	1	..	18	..	..	27	15	3	1	1	1	..	..	79
Saskatchewan	34	15	13	..	27	2	..	21	16	4	2	..	1	1	..	136
Alberta	22	12	5	1	6	1	3	10	4	3	..	..	1	..	1	67
British Columbia	14	30	..	..	9	..	..	23	2	2	1	..	..	..	2	79
United States	52	12	2	1	10	1	2	28	7	1	2	..	..	..	..	118
Elsewhere	27	11	9	1	2	3	..	27	4	1	5	..	1	..	1	90
Totals	3,958	844	914	124	1,101	69	39	731	235	98	187	13	13	6	58	8,274

THE PROVINCE OF ONTARIO

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry	Department of Social Science	Department of Public Health Nursing	Course in Occupational Therapy	Course for Graduate Nurses	Physiotherapy	Registered Twice	TOTALS
Algoma	33	6	5	4	2	..	1	..	3	..	3	..	1	..	..	58
Brant	44	9	8	1	10	..	..	8	2	..	4	..	..	..	1	85
Bruce	44	4	11	..	17	..	..	3	8	..	7	..	..	..	1	93
Carleton	70	8	8	4	57	..	1	18	7	2	3	..	..	..	..	178
Cochrane	9	..	..	..	1	..	..	..	2	..	..	..	..	..	..	12
Dufferin	16	3	4	1	3	..	..	1	1	..	4	..	..	..	..	33
Dundas	8	..	..	..	7	..	..	..	1	..	1	..	..	..	..	17
Durham	33	4	5	1	13	1	..	..	2	..	2	..	..	..	..	61
Elgin	18	..	2	..	16	..	..	2	1	1	2	..	..	..	..	42
Essex	49	15	16	..	29	..	..	4	1	1	2	1	..	..	2	116
Frontenac	8	2	..	..	17	..	..	5	1	1	..	..	..	..	..	34
Glengarry	3	1	1	..	5	..	..	..	2	..	..	..	..	..	..	12
Grenville	7	2	..	..	8	..	..	3	..	..	..	..	..	..	..	20
Grey	51	8	11	2	19	2	..	3	..	3	1	..	..	..	1	99
Haldimand	13	..	6	..	4	1	..	2	..	..	..	..	..	..	..	26
Halton	40	9	9	..	12	1	1	4	..	..	1	1	..	..	..	78
Hastings	27	3	6	..	14	3	..	4	1	..	4	..	..	..	..	62
Huron	43	3	12	2	13	3	1	5	2	4	2	..	..	1	..	91
Kenora	4	..	7	..	2	..	1	..	2	1	..	..	..	..	..	17
Kent	23	9	9	1	12	..	..	4	3	1	..	..	1	..	..	63
Lambton	29	6	13	1	5	1	..	2	..	..	2	..	..	..	..	59
Lanark	19	3	3	1	19	1	..	4	..	1	2	..	1	..	..	54
Leeds	22	2	4	..	10	1	..	3	..	..	1	..	..	..	1	42
Lennox & Addington	18	..	..	1	6	..	..	..	..	..	..	1	..	..	..	26
Lincoln	45	10	18	2	13	..	1	5	4	1	7	..	..	..	1	105
Manitoulin	3	..	1	..	..	..	..	..	4	..	..	..	..	..	..	8
Middlesex	25	..	10	..	66	..	1	10	2	2	5	..	..	..	1	120
Muskoka	16	2	5	..	4	1	..	1	1	..	..	..	..	..	..	30
Nipissing	17	13	1	1	8	..	..	4	3	..	2	..	..	..	..	49
Norfolk	20	6	7	..	2	1	1	1	1	..	1	..	..	..	..	40
Northumberland	28	2	1	..	14	..	..	1	1	1	1	..	..	..	..	49
Ontario	77	11	6	1	18	2	..	4	1	3	3	..	..	..	..	126
Oxford	49	8	16	3	13	1	..	7	2	..	3	..	..	..	1	101
Parry Sound	13	2	1	..	3	1	..	..	4	..	1	..	..	..	..	25
Peel	63	8	19	1	5	3	1	2	4	..	6	..	..	..	..	112
Perth	59	9	16	..	11	1	..	8	..	..	2	..	..	..	..	106
Peterborough	34	5	7	..	14	..	..	3	..	..	..	..	1	..	..	64
Prescott	4	..	..	..	4	..	..	..	..	..	..	..	..	..	..	8
Prince Edward	8	4	..	..	2	..	..	2	..	..	..	..	..	..	..	16
Rainy River	2	2	..	..	..	1	..	..	..	1	..	..	..	..	..	6
Renfrew	15	1	3	1	11	..	..	3	..	..	1	..	..	..	..	35
Russell	1	..	..	..	2	..	..	..	1	1	..	..	..	..	..	5
Simcoe	98	18	23	1	16	..	..	6	1	3	10	2	..	..	1	177
Stormont	8	2	..	..	5	..	..	..	..	..	..	..	..	..	..	15
Sudbury	12	..	6	..	1	..	..	..	..	..	..	..	..	..	..	19
Thunder Bay	32	4	12	..	4	3	..	3	6	..	1	..	..	..	..	65
Timiskaming	16	7	8	..	10	3	..	1	5	..	2	..	..	..	..	52
Victoria	21	7	5	1	12	1	1	3	1	..	2	1	1	..	..	56
Waterloo	53	14	13	3	22	2	2	8	2	..	4	1	1	..	1	124
Welland	59	16	11	..	13	..	..	2	..	2	2	2	..	..	..	107
Wellington	77	9	12	3	23	2	..	17	2	1	5	2	1	..	2	152
Wentworth	87	39	43	5	49	4	2	26	8	4	2	..	..	..	5	264
York	177	22	37	3	22	1	..	22	3	1	13	..	..	..	1	300
Toronto	2,019	428	459	77	337	20	20	336	88	44	51	1	1	4	35	3,850
Totals	3,769	746	880	121	1,005	61	34	550	183	79	165	12	8	5	54	7,564